

FREE TYPE IN PROGRAMS • SOFTWARE REVIEWS
WORD PROCESSORS FOR THE C-64

November/December 1985

\$2.50 U.S.

\$3.50 Canada ISSN 0744-8724

COMMODORE

microcomputers

THE BEST OF 1985

COLLECTORS EDITION
BUYERS GUIDE TO THE C-64/128

HARDWARE • JOYSTICKS • UTILITIES • SIMULATIONS • PRO-
DUCTIVITY SOFTWARE • HOME APPLICATIONS/ • SELF
ENRICHMENT • FAST LOADERS • BOOKS • TUTORIALS
GRAPHICS/LIGHT PENS • VOICE PRODUCTS • MUSIC

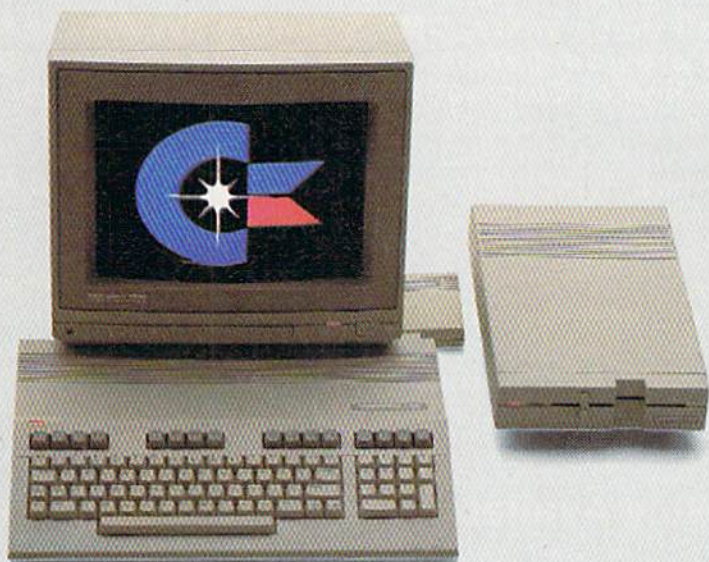
KEYBOARDS • LANGUAGES • PLUS
ARCADE GAMES • BRAIN GAMES
SPORTS GAMES • AND MUCH MORE

EXCLUSIVE!
FIRST LOOK
FOURTH
PROTOCOL
SOFTWARE





**If you own an Apple IIc,
you'd have to add three more Apple IIc's,
an Extra Keypad,
30 Block Graphic Sets,
Color Sprites,
two more voices,
four instruments,
a Cartridge Port, a Joystick Port,
and a Commodore 64...**



**to match the versatility, expandability
and higher intelligence of the
new Commodore 128**
(and it costs less too).

The new Commodore 128™ personal computer is breakthrough technology at a breakthrough price. It outshines the Apple® IIc in performance capability, performance quality and price. It is expandable to 512K RAM. The IIc

doesn't expand. Commodore 128 has a numeric keypad built into its keyboard that makes crunching numbers a lot easier. And graphic and sound capabilities that far exceed those of the Apple IIc. But the most important news is that

Commodore 128 jumps you into a new world of business, productivity, education and word processing programs while still running over 3,000 programs designed for the Commodore 64.™ That's what we call a higher intelligence.

COMMODORE 128 PERSONAL COMPUTER
A Higher Intelligence

*Apple is a registered trademark of Apple Computer, Inc.

© Commodore 1985

It's Absolutely Shocking!!!

After all these years, CMS Software Systems is still the only company providing professional quality accounting software for the complete line of Commodore business computers.

Whether you own an 8032, 8096, SuperPET, B-128, C-64, or the new C-128, we have a professionally written, fully integrated Accounting System designed especially for you.

Introduced in 1979, the **CMS Accounting System** was the first Accounting System available for Commodore computers. Not satisfied with just being first, we have continued to update, expand, and improve until today, the **CMS Accounting System** is widely recognized as one of the finest Accounting Systems available for any computer.

Now Available for the Commodore C-128



- General Ledger
- Accounts Receivable
- Billing
- Accounts Payable
- Job Costing
- Payroll

\$179.95

Complete Price

For more information see your Commodore dealer or call Cathy York at 214/289-0677.

CMS Software Systems, Inc. • 2204 Camp David • Mesquite, TX 75149

Commodore

microcomputers

EDITOR'S NOTES	5
LETTERS	6
NEWS	12

EXCLUSIVE SOFTWARE REVIEW

A First Look at <i>The Fourth Protocol</i> reviewed by Shay Addams	18
--	----

SOFTWARE REVIEWS

Space Shuttle reviewed by Ervin Bobo	20
Talking Teacher reviewed by Tom Benford	22
Rainbow Painter reviewed by Christine Adamec	24
Mr. Do! reviewed by John Jermaine	26
Quink reviewed by Cheryl Peterson	28
Typing Tutorials for the 64 reviewed by Walter Salm	30
Better Working Spreadsheet reviewed by Ken Silverstein	38
Power Plan-64 reviewed by Al Willen	40
ADA Training Course reviewed by Shlomo Ginsburg	42
Sixth Sense reviewed by Bob Sodaro	44

COMPUTER WIZARD

128 Sprites and Sprite Utilities by Louis F. Sander	46
---	----

BOOK REVIEWS

At Home with BASIC reviewed by Al Willen	60
Commodore 64 Troubleshooting & Repair Guide reviewed by Al Willen	62

TELECOMMUNICATIONS

Quantumlink Debuts by Howard Millman	92
How to Connect Your Modem	93

HARDWARE REVIEWS

Reset Master	96
--------------	----

COMMODORE 64 USERS ONLY

Multiscreen by Louis R. Wallace and Ken French	98
Pygmalion: A Self-Improvement Program by Tim Thompson	102
Com64 Grapher by Milium D. Perry	110

TECHNICAL TIPS

Tech Notes by Jim Gracely	115
---------------------------	-----

HOW TO ENTER PROGRAMS IN COMMODORE MICROCOMPUTERS

USER GROUPS	126
-------------	-----

THAT DOES NOT COMPUTE	136
-----------------------	-----

ADVERTISERS' INDEX	136
--------------------	-----

THE BEST OF 1985

THE BEST OF 1985 FOR THE COMMODORE 64

78

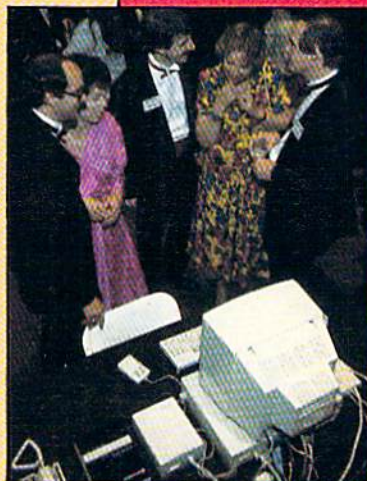
The products that were our reviewers' favorites in 1985, from very serious spreadsheets to very silly games. A handy guide to what's worth buying.

compiled by the Editors

COMMODORE LAUNCHES THE AMIGA

74

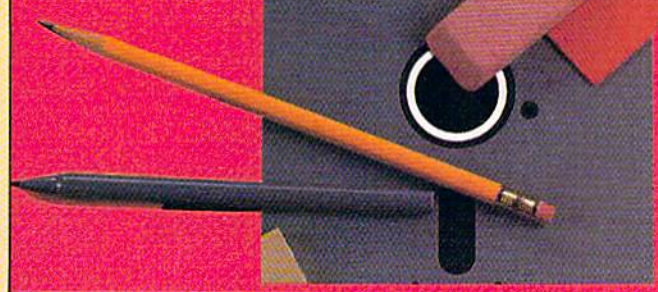
A freelance writer who uses many different kinds of personal computers covered the New York launch in July—and came away a believer. by Louis R. Wallace



BUYER'S GUIDE TO WORD PROCESSORS FOR THE COMMODORE 64

68

Probably the most comprehensive guide ever compiled, covering over 30 word processors, their strengths and weaknesses, and who should buy them. by Donald Maxwell



YOU'RE DOING MORE THAN EVER SO SHOULD YOUR SOFTWARE

Integrated Performance and Versatility

The really exciting thing about integrated software is that you can tailor it to fit your needs. Use the word processing to produce error-free copy.

Organize file information, then use identifying keys to produce letters and reports without retyping. Or you can keep research notes and selectively recall them to include in a term paper. Rental properties? Stock portfolio? Budgeting? The spreadsheet helps you to monitor your money and investments. To include a visual presentation with your report, simply use the graphics capabilities.

Because the programs reside in memory together, you work without breaking your pace. No fussing with loading various disks. No time lost in creating data transfer files. So you are free to create new ways to use your software.



Entertainment that Excites the Senses

Ride the winds on your magic carpet, explore galaxies, learn about weather patterns. For thinkers, graphic adventures provide hours of intrigue as you seek to rid a haunted town of its ghostly visitors. Or explore new territories in your quest to rescue the princess from the evil wizard.



As You Grow, We Grow
\$5.00 Update or C-128 Upgrade
\$20.00 Exchange for Complete System



Soon, you'll be able to create "macros" to record lengthy keystroke sequences and play them back with a single command. Search for information across multiple disks. Program the software for specific applications. And more. Our upgrade/exchange policy allows you to expand your system without sacrificing data disks.

The More You Do, The More We Help You Do It

Because so many people are doing more things with Tri Micro software, you'll never have to worry about advice or support. Just ask one of the more than 70,000 people who use it. "Thank you again for your phone call. It is refreshing to deal with a company that shows concern for the consumer." LJ. Harnett, CA.

"Tri Micro has created a new set of standards for software integration that other manufacturers will surely want to match." RUN, July 1985.

QUIETLY, A STANDARD IS BORN.

For the C-64™, C-128™, Plus 4™ and Atari™



TRI MICRO

14072 Stratton Way, Santa Ana, CA 92705 (714) 832-6707

STAFF

Publisher
Robert M. Kenney
Assistant to the Publisher
Mary Grace Nicoline

Editor
Diane LeBold
Assistant Editor
Carol Minton
Technical Editor
Jim Gracely
Contributing Editor
Louis F. Sander

Art Director
Robert C. Andersen
Assistant Art Director
Nancy A. Walker

Advertising Coordinator
Cheryl Griffith
Circulation Manager
John O'Brien
Advertising Representatives

SOUTHEAST/WEST
Warren Langer, Spencer O. Smith
Warren Langer Associates
9320 NW 2nd Street
Coral Springs, FL 33065
Advertising Inquiries Only
800/635-6635
In Florida call:
305/753-4124

**MIDATLANTIC
AND NEW ENGLAND**
Bob D'Ambrosio
Target Media
114 E. Main Street
Bogota, NJ 07603
201/488-7900

MIDWEST
Pamela S. Fedor
Randy Fedor
700 River Road
Fair Haven, NJ 07701
201/741-5784

Commodore Microcomputers, Volume 6, Number 6,
Issue 38, November/December 1985. ISBN 0-88731-
049-4.

Commodore Microcomputers (ISSN 0744-8724) is
published bi-monthly by Contemporary Marketing, Inc.,
1200 Wilson Drive, West Chester, PA 19380 U.S.A. U.S.
subscriber rate is \$15.00 per year. Canadian subscriber
rate is \$20.00 per year. Overseas subscriber rate is
\$25.00 per year. Questions concerning subscriptions
should be directed to Contemporary Marketing Sub-
scription Department, Box 651, Holmes, PA 19043,
phone (800) 345-8112. In Pennsylvania (800) 662-2444.
Copyright © 1985 by Contemporary Marketing, Inc. All
rights reserved.

Contemporary Marketing also publishes *Commodore
Power/Play*.

Application to mail at Second Class postage rates is
pending at West Chester, Pennsylvania 19380 and addi-
tional mailing offices. POSTMASTER send address
changes to: Contemporary Marketing, Box 651, Holmes,
PA 19043.

VIC 20™, Commodore 64™ and Super PET™ are trade-
marks of Commodore Electronics Ltd. PET™ is
a registered trademark of Commodore Business
Machines, Inc. CBM™ is a registered trademark of Com-
modore Electronics Ltd.

ABC Membership applied for.

One and One Equals One . . . Given Time

Which of our two magazines do you read? Obviously you're reading **Commodore Microcomputers** right now. But about 70 percent of you also read our sister publication, **Commodore Power/Play**. That didn't used to be true. Back in the old days—maybe 2½ years ago—there were two separate and distinct types of Commodore users: the "serious" users (harumph to anything lighter than coding your own spreadsheet in machine language) and the "fun-and-games" users (if it doesn't wiggle, zoom or explode, don't bother me). Thus we created two magazines: one for people who used computers as tools and the other for those who used them as toys.

You don't need to be told that the line between those two types of users has blurred—even disappeared—over these two years or so. You are much more versatile than the typical computer user of the early 80's. And much more computer-literate, even if you've only recently bought a computer. You probably use your Commodore computer for word processing, learning math (or English or speed reading or whatever . . .), self-enrichment, telecommunications, writing your own programs—and playing games. Our two distinct audiences have become, for the most part, one.

Which is why you probably read both our magazines.

And, if we've been doing our job right, you should have noticed that the magazines have begun to look more and more alike. We've made their formats consistent, so those of you who read both can feel as if you're getting one monthly magazine, instead of two bi-monthlies. Throughout 1986, you'll see more and more crossover between the two, not only in how they look, but in what they cover. We'll review selected games, for instance, in **Commodore Microcomputers**. (We've already begun that trend in this issue. See our review of Bantam's **The Fourth Protocol**.) And you'll start to see certain types of "serious" applications showing up in **Commodore Power/Play**. In other words, you'll be getting more of what you want—every month.

You'll also be getting increased coverage of the new Commodore 128 and Amiga computers in both magazines, rather than in just one or the other. Commodore 128's have been selling out as quickly as Commodore can ship them, and the Amiga is rapidly gaining a reputation as the outstanding new computer of the year—if not of the decade. You can continue to count on our magazines to bring you software reviews, programming tips, type-in programs and new product information for these new computers. But you also get an added advantage. Because, among all the Commodore-specific magazines, we have the closest relationship with Commodore itself, you'll continue to get all the late-breaking news about these Commodore products before anyone else does. In *both* magazines.

Our loyal Commodore 64 owners take note. You will also continue to get what you want. You will, as always, find programs and product information to help you get the most out of your 64. After all, you still make up the bulk of our readership, and we are dedicated to keeping you happy.

Since this is our last issue of **Commodore Microcomputers** for 1985, we would like to thank you all for your letters and calls over this past year. Whether you've gotten in touch about a program problem or simply to pat us on the back for the improvements we've made, we appreciate hearing from you. It helps us do our job better. Please continue to stay in touch.

—Diane LeBold
Editor

SOFTWARE By TRI MICRO



(Who?)

EASY TO USE,
EASY TO AFFORD

"Team-Mate's integrated design has resulted in a high performance program that Commodore users will discover to be one of the best available." RUN, July 1985.

"The beauty is that at any time you can go from one program to another without information loss." FAMILY COMPUTING, November 1984.

"The File Manager allows individualized file formats...A wide variety ranges from the ability to create printed lists...to a selective report feature that lets you access a certain group of records." RUN, April 1985.

"Worth the money, if only for the spreadsheet." InfoWorld, Dec. 17, 1984.

"As a marriage of convenience and value, the program succeeds handsomely...Tri Micro's spreadsheet possesses impressive features." Commodore Microcomputer, May-June 1985.

Team-Mate, Write File,
Home Office, Plus Graph
Your Personal Accountant

"Colorful graphics, sprightly music, and a variety of obstacles help keep the game lively." COMPUTE!'s Gazette, December 1984.

"Rug Rider is definitely a challenge. It gives the hard core game player as much action and thrills as he or she could possibly want." POWER PLAY, April 1985.

Rug Rider, Entertainer 1, Corom
Snowdrifts & Sunny Skies, Ghost Town

AND THERE ARE TWO
REASONS TO BUY NOW

Every purchase made between now and January 15, 1986, will include a valuable coupon book, with savings on computer magazine subscriptions, diskettes, computer books, accessories and software.

In addition, every one who mails in his warranty registration will receive membership in the PLUS EXCHANGE, a user group of Tri Micro software, for three months.

Now that you know us better, next time you shop for software, instead of saying "WHO?", you'll say "HELLO!"

TRI MICRO

14072 Stratton Way, Santa Ana, CA 92705
(714) 832-6707

LETTERS

To the Editor:

I've been reading your magazine since the March/April 1985 issue. I find it to be well written and inclusive.

I'd like to add a little more information on Datamost's *Kwik-Load!* utility, which Walter Salm reviewed in the March/April issue. Mr. Salm was correct; *Kwik-Load!* does substantially increase the loading and saving

speed of unprotected software. However, one thing he didn't mention was that for *Kwik-Load!* to work properly, the disk drive from which you're loading must, at least during the load process, be the only active peripheral on the serial bus. Otherwise, you'll get a "FILE NOT FOUND" error message.

John Everly

To the Editor:

Regarding your hardware review of the Cardco MT/1 Monitor Tuner in the May/June 1985 *Commodore Microcomputers*, Cardco has informed me that they have discontinued their line of monitor tuners. If there is any person that wishes to sell theirs, or a business that still carries these, I would appreciate being informed of their address.

Richard Perritt
130 Bloor Avenue
P.O. Box 603
South Porcupine, Ontario
P0N 1H0 Canada

TEAM-MATE: THE SINGLE SOLUTION TO THE CLUTTER THAT CAN TIE UP YOUR DESK

When you buy TEAM-MATE, you receive an integrated software system — word processing, file management, spreadsheet and graphics — for the same price you would normally pay for one program. The beauty of integration is the ability to go from one program to another instantly with no loss of screen information. No more lengthy program loads with various disks. No time lost in creating data transfer files. Now you can concentrate on solving problems again and again.

With all the information available simultaneously, you can view the spreadsheet while analyzing it in the word processor. You have total freedom to design reports and forms, which will use all or part of the data stored in the file manager. And because the print preview mode works with the integrated data, you can view where this information will be printed on the form, letter, or label.

So if you need only one great piece of software, buy TEAM-MATE. It's like buying one piece of software and getting three others free. For the C-64™, C-128™, and Atari™

For more information on where to buy Tri Micro software 714-832-6707

TRI MICRO

14072 Stratton Way, Santa Ana, CA 92705



To the Editor:

The "Disdump" article by M.W. Caprio in the May/June 1985 issue of *Commodore Microcomputers* is well written and provides a very useful program for displaying and printing machine language routines. The author advised us that it was written for the Star Gemini printer, and since I have a VIC 1525 and an Epson MX-80, I rewrote some lines to work with both of those two printers. I also improved the data display and printout formats. Following is a listing of the new lines with short descriptions.

Replace lines 100-160 with the following lines to give credit to the original publication.

```
100 REM * * * * *
110 REM * DISDUMP *
120 REM * - - - - -
121 REM * COMMODORE *
122 REM * MICROCOMPUTERS *
123 REM * MAY/JUNE '85 *
124 REM * *
160 REM * * * * *
```

Replace line 220 and add line 245 to provide a modified title and author reference.

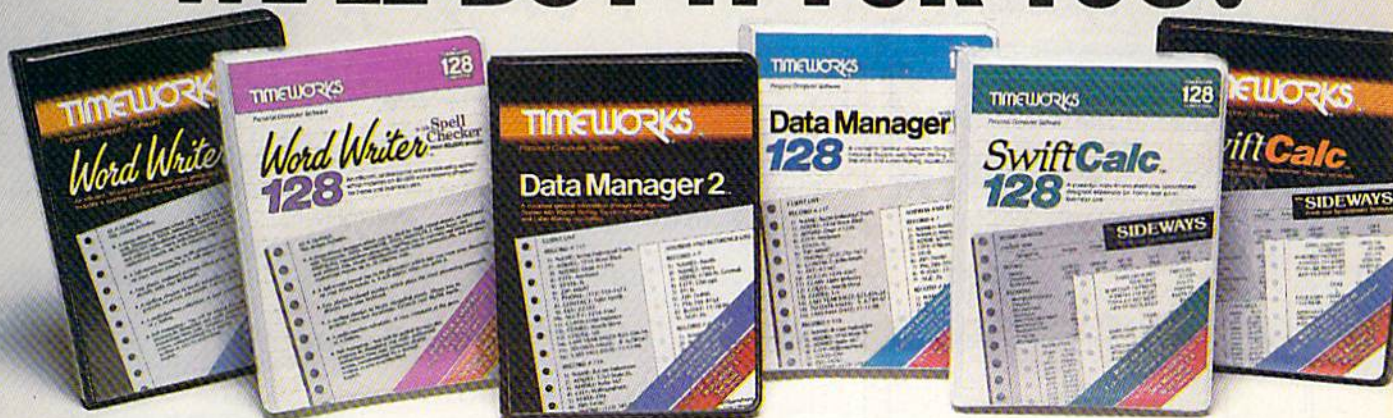
```
220 PRINT TAB(12) "[RVS,SPACE
4]DISDUMP
[SPACE4,RVOFF]"
245 PRINT TAB(12) "[RVS,SPACE]
REVISED BY EHG
[SPACE,RVOFF]"
```

Add new lines to provide for printer selection menu.

```
365 IF HD$ < > "Y" THEN 370
366 PRINT "WHAT PRINTER?"
367 PRINT "[SPACE5]C = COM
MODORE . . . DEVICE#5"
368 PRINT "[SPACE5]E =
```

Continued on Pg. 8

IF YOU CAN FIND A BETTER PROGRAM WE'LL BUY IT FOR YOU!*



WORD WRITER with Spell Checker

Now with 85,000 word Spelling Checker

- An efficient, 80-column professional word processing system which includes a spelling checker and built-in calculator.
- Contains all the features you'll need for everyday word processing, plus most of the sophisticated features found in more expensive programs: document chaining, form letter printout, page separations, horizontal and vertical scrolling, and more.

With Timeworks you get more power for your dollar

You can use each program alone. Or interface this trio – one at a time if you like – into a completely integrated productivity system that delivers all the power and features most of you will ever need . . . at a cost that lets you enjoy their use.

Look for these and other Timeworks programs at your favorite dealer. Or contact Timeworks, 444 Lake Cook Road, Deerfield, IL 60015. Phone: (312) 948-9200.

DATA MANAGER 2

Faster, more efficient, more versatile

- A complete general information storage and retrieval system with report-writing, graphics, statistics, and label-making capabilities.
- Exclusive X-SEARCH, X-SORT, and X-CHART features allow you to cross-search any category of information; sort items alphabetically, numerically, or by date; break down statistical information into categories; and graphically view your results.

With Timeworks you get more than software

You Get Our Customer Technical Support Team

At the other end of our toll-free hotline, you'll find our full-time Customer Technical Support Team. Free of charge to all registered users.

You Get Our Liberal Trade-Up Policy

You'll find the details inside each package.

SWIFTCALC with SIDEWAYS

New easy-to-use spreadsheet for home and small business use

- The SIDEWAYS option lets you print all your columns on one, continuous sheet . . . sideways.
- 250 rows and up to 250 columns (128K version) provide up to 62,500 cells (locations on the spreadsheet) in which to place information.
- Performs mathematical functions up to 17 digits. Allows the use of minimum and maximum values, averages, sums, integers, absolute values and exponential notation.

* With Timeworks you get our Money Back Guarantee

If you can find anything that works better for you, simply send us your Timeworks program, your paid receipt, and the name of the program you want, along with your check or credit card number for any retail price difference. If it's available, we'll buy it for you.**

For Apple, IBM, Commodore 128 (128K) & Commodore 64 Computers



More power for your dollar.

Other Timeworks Programs:

- The Evelyn Wood Dynamic Reader
- Sylvia Porter's Personal Finance Series
- Swiftax
- Cave of the Word Wizard
- Business Systems
- Wall Street
- The Electronic Checkbook
- The Money Manager

These programs interface
with each other
Now available for
Commodore 128

** Offer valid for 90 days from date of purchase.

*** Registered trademarks of Apple Computer, Inc., International Business Machines Corporation, and Commodore Computer Systems

© 1985 Timeworks, Inc. All rights reserved.

COMMODORE 64™

PUBLIC DOMAIN SOFTWARE (Disk Only)



Best of Games No. 1

Includes:

Football, Baseball 64, Golf, Bowling Champ, Backgammon, Africa Safari, Action Hockey and many more.

2 Disk Set
(Over 50 Programs) **\$17.95**

Las Vegas Games No. 1

Includes:

Las Vegas Slots, Blackjack/21, Poker, Roulette, Craps, and a lot more.

(Over 20 Programs) **\$12.95**

Awesome Synthesizer Sounds

Includes:

"Billie Jean", "Beat It", "Ghostbusters", "Rocky 3 Theme", "99 Balloons", "Girls Want Fun", "Chariots", "California Girls", "Mash Theme", "All Night Long", "Mr. Roboto", "Maniac", "Surfin' USA", Synth Sample, Sound Effects, tons more.

2 Disk Set!
Over 50 Songs, and Sounds! **\$17.95**

Mixer Disk

A mixture of games, music, business/utilities, education and a lot more.

(35-40 Programs) **\$9.95**

Add \$2.00 Shipping/Handling

Send Check or Money Order to:

GSR Software Co.

538 S. 2nd St.

Albion, NE 68620

Commodore 64™

is a trademark of Commodore Electronics LTD.

TIME TUTOR



Introduce Your Child to the Fun of Computer Learning

"Time Tutor" takes the complex task of learning to tell time and breaks it into easy-to-follow lessons.

The system is designed to advance the student from the basic understanding of the clock through all the functions of telling time in four easy lessons. Designed for children aged 4 to 8.

Features Include:

- Five learning modules, including the introduction, and four time telling lessons designed to make learning to tell time enjoyable & easy
- Positive reinforcers used throughout the lessons are motivating, colorful & unique
- Easy to follow directions and explanations that require minimal reading & adult guidance
- Each lesson is progressively harder as the student advances through the "Time Tutor"
- Progress through each lesson is scored to measure the child's skill level
- "Time Tutor" supports & builds on time concepts taught in the classroom

Available on diskette for the Commodore 64™
\$24.95 plus \$3 postage & handling. IL res. add 6%.



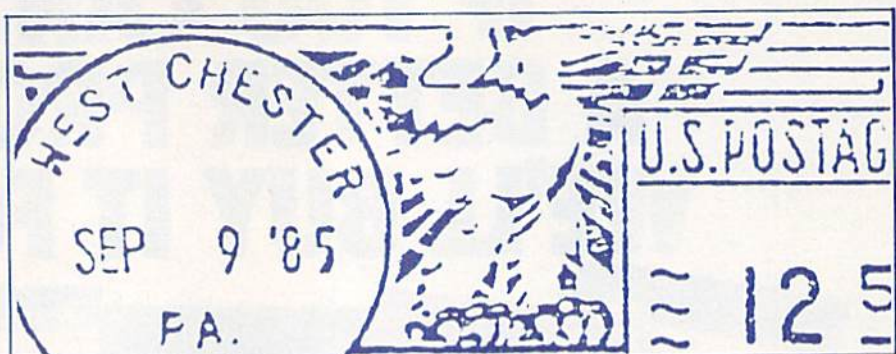
Superior Micro Systems, Inc.

P.O. Box 713 • Wheeling, IL 60090

Dealer inquiries welcome!

Commodore 64™ is a registered trademark of Commodore Electronics, Ltd.

LETTERS



EPSON MX80™

369 INPUTPS

Change these lines to avoid hyphenating the word HIGHER.

390 PRINT " [DOWN]THE
ENDING ADDRESS MUST BE
HIGHER"

400 PRINT " THAN THE
STARTING ADDRESS." FOR
I = 1 TO 2000:NEXT I:GOTO
310

These new lines provide the necessary tabulations for the two printers.

450 IF PS = "C" THEN OPEN4,5:
CMD4:GOTO 465

451 IF PS = "E" THEN OPEN4,4:
CMD4:GOTO 460

452 GOTO 366
460 PRINT CHR\$(27)"D"
CHR\$(5) CHR\$(13)
CHR\$(18) CHR\$(21)
CHR\$(26) CHR\$(0):
GOTO 470

465 Y\$ = CHR\$(16):X0\$ =
CHR\$(0):X1\$ = CHR(1):X2\$ =
CHR\$(2):X3\$ = CHR\$(3):
X4\$ = CHR\$(4)

466 X5\$ = CHR\$(5):X6\$ = CHR(6):
X7\$ = CHR\$(7):X8\$ =
CHR\$(8):X9\$ = CHR\$(9)

These lines improve the printout and provide the address.

915 IF PS = "C" THEN 952
920 PRINTC;CHR\$(9);S-N;
CHR\$(9);SS\$;CHR\$(9);OPS;
930 IF AD\$(2) = "" THEN PRINT
CHR\$(9);AD\$(1);AD\$(2);:
GOTO 950

940 PRINT CHR\$(9);AD\$(2);
AD\$(1);
950 PRINT CHR\$(9);CD\$;:GOTO
960

952 PRINT C; Y\$X0\$X4\$S-N;
Y\$X1\$X1\$SS\$Y\$X1\$
X6\$OPS;

954 IF AD\$(2) = "" THEN PRINT
Y\$X1\$X9\$AD\$(1)AD\$(2);:
GOTO 958

956 PRINT Y\$X1\$X9\$AD\$(2)

ADS(1);

958 PRINT Y\$X2\$X4\$CD\$;

These lines add the address to the display.

1050 PRINT C;TAB(4)S-N;
TAB(11)SS\$;TAB(16)OPS;
1060 IF AD\$(2) = "" THEN PRINT
TAB(19)AD\$(1);:GOTO 1080
1070 PRINT TAB(19)AD\$(2);
AD\$(1);

1080 PRINT TAB(24)CD\$;

On lines 1210, 1220, 1260, 1280, etc., for those mnemonics having only a space between the three-letter mnemonics and the \$, add another space to force the \$ one space to the right, thus causing it to align with the \$ of other mnemonics that have a parenthesis or # preceding the \$. This will make the data much easier to read.

To use two printers selected by software, one must be switched to address five. That is easy to do with the slide switch on the back of the Commodore 1525.

To print only to a Commodore printer, delete lines 366-369, 451, and 460. Then replace line 450 with

450 OPEN4,4:CMD4

To print only to an Epson MX80 printer, delete lines 366-369, 450, 465, and 466. Then replace line 451 with

451 OPEN4,4:CMD4

*E.H. Giles
Sunnyvale, California*

To the Editor:

I've just returned from a one-year teaching exchange to the beautiful country of Australia. In the state of Victoria, Commodore computers are gaining a foothold, though in general they are running about a year behind us in availability and prices. For example, when I arrived at my high school (Nathalia High), I began a search for a

Continued on Pg. 10

EXPAND IT



NOW
FOR YOUR
COMMODORE 64
& 128

EXPAND YOUR COMMODORE 64™ WITH
NAVARONE'S NEW CARTRIDGE EXPANDER

Plug in up to three cartridges at a time.
Select the program you want. Even reset
the computer independently of the
power switch.

- Reduces cartridge swapping
- Built in reset button
- Saves wear & tear

NOW ONLY
\$24.95



NAVARONE INDUSTRIES, Inc.
19968 El Ray Lane
Sonoma, California 95370
Phone: (209) 533-8349

*Commodore 64 is a
trademark of Commodore Electronics, LTD. respectively.
This product is manufactured by Navarone Industries
for use on the Commodore 64 computer and is
not made, sponsored, authorized or approved
by Commodore Electronics, LTD.

LETTERS

computer system. At that time (March 1984), the big seller was the VIC 20, and it was selling locally for around \$300.00 U.S.

At that time, the Commodore 64 was advertised, but not readily available, for about \$600.00 U.S. As the computer coordinator for Nathalia, I was pleased that by mid-year we had ten 64 computer systems installed and operating for less money than our neighboring school district paid for a smaller Apple system.

Though they have to import a lot of their technology, the Victorian Education Department is very good about mobilizing and supporting computer education. They appointed a committee which studied their needs, studied the various computers available, and recommended the three best computers for class usage. The 64 made that list. By the time my year was up, every region had a computer center equipped with 64's, and dedicated to in-servicing teachers. The government then paid for substitute teachers so that interested teachers (two from

every school) could take an entire week off for free training. Needless to say, I had a very rewarding year.

Tim Boyd
Sugarcreek, Ohio

To the Editor:

I thought that your Commodore users might like to know how the 64 is making out north of the border. A Commodore word processing system using our *PaperClip* program, a Commodore 64, and the Commodore 1702 monitor recently did extremely well in a major competition against the giants of the computer industry, including IBM, Apple, Xerox, and Sperry.

The Canadian Science Writers Association sponsored an event called The Great Canadian Word Processing Rally at McMaster University in Hamilton, Ontario, and Commodore proved not only that it can hold its own against the expensive dedicated word processing machines, but also that it is one of the best buys.

We finished in the middle of the to-

tal points competition, but when the total points were scaled to the cost of the system, we wound up at the top in the number two position, far ahead of the rest of the pack.

We joked with the judges after the rally that the Commodore word processing system should be given bonus points, because it also plays great games, unlike most of the competition.

Martin Avery
Batteries Included
Ontario, Canada

Commodore Microcomputers welcomes letters from readers. Do you have an unusual application for your Commodore computer? Do you wish to comment on an article? Would you like to make a suggestion on how we can better serve our readers? Please send them to:

Commodore Microcomputers
1200 Wilson Drive
West Chester, PA 19380
Attn: Letters



Grolier Electronic Publishing announces one of the greatest advances in telecommunications since Bell told Watson, "I want you."

The Information Connection™ is the first access software that takes the mystery out of using a modem.

And, given the frustration that modems have caused computer users, that is a great advance.

The Information Connection makes using a modem as easy as dialing a telephone.

It teaches you everything you need to know about going online—in just minutes—right on the screen, and lets you practice without going online.

Miraculously, its ease of use is matched by its phenomenal power. Far greater power than you would get from telecommunications software costing three or four times as much.

So you can grow with *The Information Connection*. But you can never outgrow it! For it has more power than even a "power user" can use up.

With *The Information Connection*, you and your computer are connected to online databases, electronic mail services and bulletin boards. To computers down the block and around the world. To 300, 1200 or 2400 Baud modems. Instantly.

You merely have to point to make your computer dial, hang up, capture or upload text. A built-in text editor lets you create, edit, send and receive standard ASCII files—compatible with most word processors.

The Information Connection is a registered trademark of Grolier Electronic Publishing, Inc. Apple is a registered trademark of Apple Computer, Inc. Commodore is a registered trademark of Commodore Business Machines, Inc. IBM is a registered trademark of International Business Machines, Inc.

You can easily access services like CompuServe and The Source—automatically—thanks to pre-written "macros" (scripts), saving time and money.

The Information Connection: because you want your first access software to be the best you can buy. And the last you'll ever need to buy.

Connect now. At your favorite computer software dealer.*

THE INFORMATION CONNECTION™

It demystifies using a modem.

And gives you access to the world.

\$39.95 Commodore 64™ and 128™

\$59.95 Apple® II family and
IBM® PC and compatibles



*If your dealer doesn't yet have *The Information Connection*, order directly by calling Jean Cleary toll-free at 1-800-858-8858 ext. 3530. Major credit cards honored—and satisfaction guaranteed. Shipping, handling and tax additional.



Grolier Electronic Publishing, Inc.
SHERMAN TURNPIKE, DANBURY, CONNECTICUT 06816 • (800) 858-8858

ENHANCER 2000



Commodore® Compatible Floppy Disk Drive

One Year Warranty With Second Year Extended Warranty Available

“Where Speed and Quality Meet”

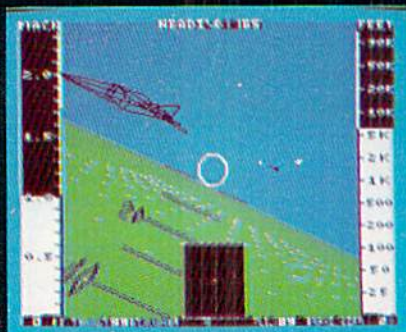
• SUPER HIGH SPEED • SLIM LINE CONSTRUCTION (LOW PROFILE)
FULLY COMMODORE COMPATIBLE • DIRECT DRIVE (DC) MOTOR •
AVG. MTBF RATE OF 10,000 HOURS • VENTED CASE • SOLID STATE
POWER SUPPLY • DUAL SERIAL PORT (CHAINING OPTION) • 5 1/4"
INDUSTRY STANDARD FORMAT

Manufactured Exclusively BY CHINON INDUSTRIES of Japan For “THE COMTEL GROUP”

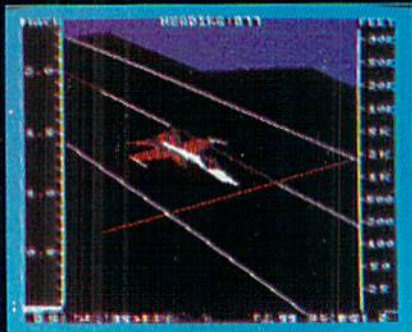
Foreign And Domestic
Inquiries Welcome

1651 East Edinger Suite 209 Santa Ana, CA 92705
Commodore® is a Registered Trademark of Commodore Bus. Machines.

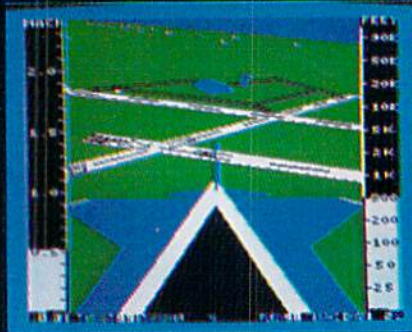
Telephone: (714) 953-6165
Telex: 503727



F-16 Dogfight with Enemy MIG-23 Fighters



F-18 on the Deck of a Nimitz-Class Aircraft Carrier (Control Tower View)



F-16 High-G Pullout over Detailed Wargame Scenery (Rear View)

Jet

From the author of Flight Simulator II comes a new dimension in realism. Jet simulates two fast and maneuverable supersonic jet fighters, a land-based F-16 or a carrier-based F-18. The simulator includes modern electronic flight instrumentation and the most advanced weaponry available. Jet's simulation sophistication, combined with excellent visual attitude references, makes it truly enjoyable to fly.

Easy aircraft control coupled with ballistic thrust gives you the kind of aerobatic maneuverability only a modern jet fighter can provide. Jet's attitude indicator is easy to read no matter what your orientation. A full-screen out-the-window view helps you get the most out of Jet's excellent flight controls. And that's a major consideration when flying at speeds in excess of 1300 MPH.

With Jet you can fly through either structured or non-structured environments. Engage in a deadly variety of combat missions. Explore the wargame territory, or relax by practicing precision aerobatic maneuvers. Load in scenery from optional United States Scenery Disks. You can even load in scenery off the Flight Simulator II disk.

New high-performance graphic drivers provide beautifully detailed scenery in either day or night-flight modes. You can look forward, left, right, rearward, or straight up out of the cockpit with a single keypress. The Jet simulator even includes a special view-magnification feature that lets you zoom-in to identify objects or details at a distance.

Jet will run on any Commodore 64 or Commodore 128 computer with one disk drive and either color or monochrome monitor.

See Your Dealer ...

or write or call for more information. For direct orders please enclose \$39.95 plus \$2.00 for shipping and specify UPS or first class mail delivery. Visa, MasterCard, American Express, and Diners Club cards accepted.

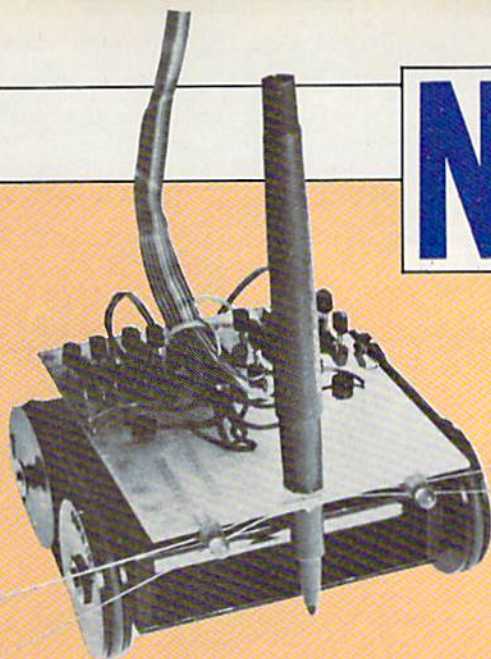
SCENERY DISKS FOR JET AND FLIGHT SIMULATOR II ARE NOW AVAILABLE.

Commodore 64 and Commodore 128 are trademarks of Commodore Electronics, Ltd.

subLOGIC
Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995

Order Line: (800) 637-4983
(except in Illinois, Alaska, and Hawaii)

NEWS



Robot Kit

The Micro-Kitten by Spectron Instrument provides remote manipulative output for the VIC 20 and Commodore 64, and has a broad range of uses, including automation modeling, transporting, drawing, gaming, and starring in educational and home movies. Expansions include various sensing devices, radio control, and on-board intelligence.

Kits include starter programs, instructions, applications, parts, and computer interface circuit (useful with other Spectron kits). Base list price is \$80 and \$120 assembled, or \$195 with radio control and \$330 with radio control assembled. (Spectron Instrument, Robot Division, MS 24, 1342 W. Cedar Avenue, Denver, CO 80223)

Telecommunications Program

The *Information Connection* for the Commodore 64 combines a telecommunications program, text editor, and tutorial software on one disk. Intended for the beginning computer user, the *Information Connection* teaches users all the fundamentals of telecommunications that allow them to tie into CompuServe, The Source, Dow Jones/News Retrieval, QuantumLink, and other on-line services.

The tutorial features a simulated on-line session which allows the user to practice searching for information without having to actually be on-line. It offers a simple user interface. There are no control keys to press. If you can point, you can operate the program, which features plain-English prompts, full-sentence status messages, and consistent stop/go control.

The program was designed by Ken Skier, who wrote *SkiWriter* and *SkiWriter II*. It has a suggested retail price of \$39.95. (Grolier Electronic Publishing, 95 Madison Avenue, New York, NY 10016)

Sequel to *The Print Shop*

Broderbund has released *The Print Shop Graphics Library, Disk Two* for the Commodore 64, the second follow-up product to its top-selling program *The Print Shop*.

The Print Shop Graphics Library, Disk Two—like *The Print Shop Graphics Library, Disk One*—provides additional designs, symbols and pictures for do-it-yourself graphic creations, but this time in six new categories: jobs, hobbies, people, places, travel, and health. The retail price is \$24.95. (Broderbund, 17 Paul Drive, San Rafael, CA 94903-2101)



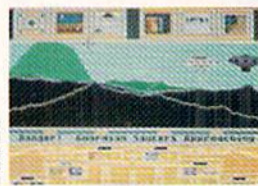
Commodore 64 Software Wins Emmy

Richard and Ron Grant of Sherman Oaks, California, have won an Emmy award for Technical and Scientific Achievement in Television for their *Time Processor* software. This software for the Commodore 64 helps composers develop musical scores to be synchronized with television or movie scripts. By displaying information on timing tempos and measures, the software allows the composer to make adjustments to an entire score quickly and accurately. It can also audibly create the metronome clicks for the composer to use when conducting the music. The *Time Processor* has been used to create musical scores for television programs such as *Dallas*, *Knots Landing*, *Knight Rider*, *Mighty Orbits*, *Berringers*, and the Olympic coverage.

This is the first Emmy ever awarded to a piece of software. We congratulate Richard and Ron on their award and acknowledge their contributions to both the television industry and the library of excellent Commodore 64 software.

EPYX PRESENTS LUCASFILM GAMES™ KORONIS RIFT™

WIN a day at Lucasfilm! Special sweepstakes offer.*



It takes all kinds to make a galaxy interesting. Like you, a *techno-scavenger*. Your kind are out to get rich scavenging Ancient technology. And now you've found the fabled

Koronis Rift—the weapons testing grounds of the Ancients. The chance of a lifetime awaits you.

Abandoned war hulks litter the Rift—crammed with exotic weapons and technology. The life like fractal graphics take you to this mythical land of the Ancients. The mind's-eye point of view puts you right in the driver's seat of a Surface Rover. A hulk looms before you—your mind races, feverishly planning a strategy. What weapons do you need to survive? What technology will fetch the highest price? If you can pack your battered Rover full—you'll be rich beyond your wildest dreams. But it won't be easy. The Guardians—genetically

engineered mutants—stand watch over their creators' technology. And they deal swiftly and ruthlessly with characters like techno-scavengers.

But you've got a plan. If you and your trusty Science Droid can scavenge the right combination of weapons and technology—and get off the planet alive—you'll make it big. Destroy the Guardian base and you'll even be a hero! The treasures of the Ancients are yours . . . if you've got what it takes.

C64/128	ATARI	APPLE
Koronis Rift	✓	✓



EPYX
COMPUTER SOFTWARE

1043 Kiel Ct., Sunnyvale, CA 94089

Strategy Games for the Action-Game Player®

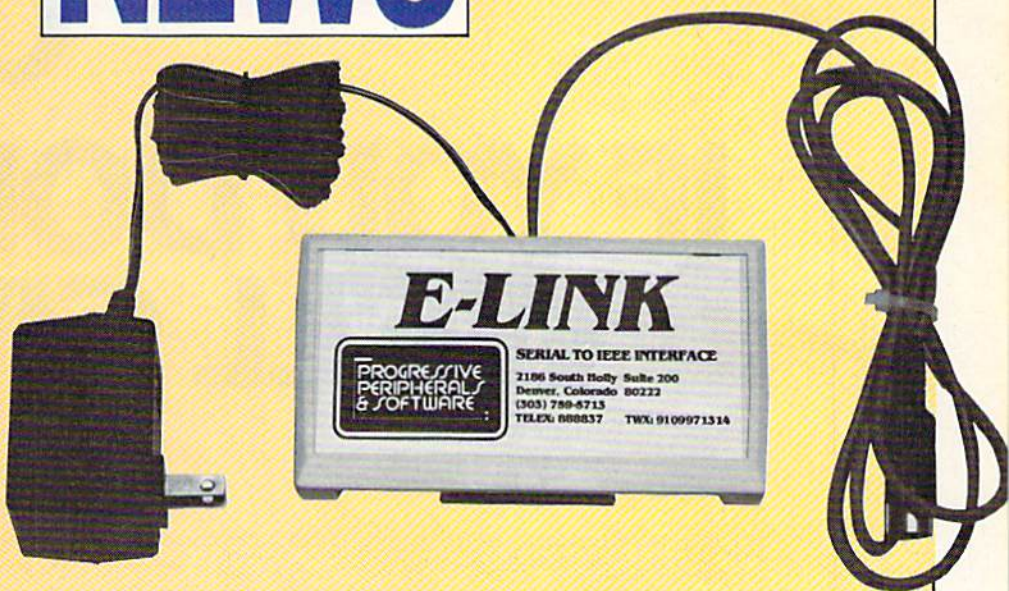


* See specially marked boxes for details. No purchase necessary. Sweepstakes ends Dec. 31, 1985. Official rules available at participating dealers.

NEWS

Serial-to-IEEE Interface

Progressive Peripherals & Software has released E-Link, a Commodore serial-to-IEEE interface that is compatible with Commodore IEEE peripherals and totally transparent to the Commodore 64. E-Link uses no internal Commodore 64 memory, has an independent power supply, and is controlled by a microprocessor. The interface retails for \$99.95. (Progressive Peripherals & Software, 2186 South Holly, Denver, CO 80222)



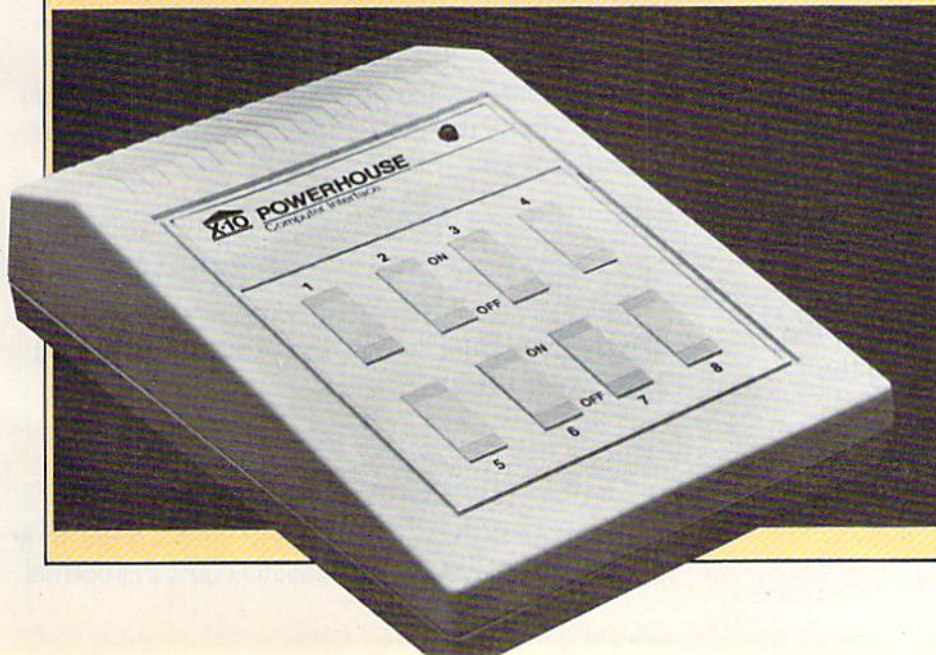
On-Line Investment Analysis

A new on-line investment analysis system, Vestor, has been introduced by Investment Technologies. The system offers any user with a computer and modem a new tool for studying and analyzing investment alternatives. Vestor provides financial information and evaluates and generates buy-sell signals for over 4,500 publicly-traded securities—including stocks, options, and futures—traded on the New York and American Stock Exchanges, plus most major over-the-counter (NASDAQ) issues.

Among the data available on-line: earnings per share; price/earnings ratios; projected highs and lows for the current trading week; regard/risk ratios; short- and long-term strength ratings; timing signals for buy or sell; and percentage profit or loss that would have resulted had the last buy or sell signal been acted upon. (Investment Technologies, 510 Thornall Street, Edison, NJ 08837)

Video Adaptor Cable for the 128

Cardco has released the C-128/80, a video adaptor cable that will enable the Commodore 128 to output 80-column monochrome displays to any standard composite video monitor. The C-128/80 connects to the computer's RGB port and the monitor's video input jack. The C-128/80 sells at a suggested retail price of \$9.95. (Cardco, 300 S. Topeka, Wichita, KS 67202)



Home Control

X-10 has introduced Powerhouse, an interface that enables the Commodore 64 to automatically control virtually all electrical devices in a home, store or office. The interface is a small peripheral that is actually a self-contained microcomputer with its own microprocessor. Memory is backed up by a battery that can sustain it without AC power for more than 100 hours. It retails for approximately \$150, including software and computer interface cable. (X-10, 185A LeGrand Avenue, Northvale, NJ 07467)

TRY THE NEW ON-LINE IF YOU DON'T USE WE'LL GIVE YOU

Introducing QuantumLink™: The on-line service developed for Commodore computer owners.

Now there's a network specially designed to provide Commodore computer owners with hundreds of services and features, at amazingly low cost. All you need is a Commodore 64® or Commodore 128™, a disk drive, and a modem, and you'll be able to get easy-to-use QuantumLink on your computer screen.

Here's just a sampling of the services available:

PREVIEW NEW SOFTWARE.

Try it before you buy it. Preview the latest software from dozens of top publishers, at the touch of a button.

HUNDREDS OF FREE PROGRAMS.

With QuantumLink you can download and keep hundreds of public domain programs. New programs are added every day.

COMMODORE INSIDER.**

An exclusive "insiders" report on what's happening at Commodore. You can find out the latest news on new computers, including the Commodore 128 and the Amiga™.

ASK COMMODORE.**

Now you can ask questions and exchange ideas with Commodore's designers and executives. Put them on the firing line!

ASK LOU SANDER.

Get fast, accurate answers to your questions directly from Commodore computer expert and noted columnist, Lou Sander.

SPECIAL INTEREST GROUPS.

Exchange messages with fellow users and participate in a wide variety of special interest groups designed especially for you. There's even a nationwide electronic user group forum run by Commodore.

LIVE CHAT.

"Talk" with people across the country—live! Join in lively interactive discussions on a variety of interesting topics.

THE LATEST ENTERTAINMENT NEWS.**

Read all about it on your computer screen! Get the daily RockNet™ news, soap opera update and Hollywood Hotline™.

PLAY GAMES AND WIN PRIZES.

Test your skills, win prizes, and have a great time challenging players from coast-to-coast in informal

COMMODORE SERVICE.

IT EVERY DAY* YOUR MONEY BACK.

play or tournaments. Our games include chess, backgammon and hangman—in full color.

AND MUCH MORE...

QuantumLink will have your Commodore computer humming all night and on weekends. You can also send and receive electronic mail,** order products from Comp-U-Store, access the world's largest record store,** check out tomorrow's headlines today from USA Today,** use the Academic American Encyclopedia.** And, we are adding new services every month.

THE LOWEST PRICED FULL SERVICE NETWORK.

For only \$9.95 a month you can have unlimited access to a whole range of QuantumLink's basic services,** plus one free hour of Plus services. After the first hour, Plus services cost only 6¢ per minute to access—less than any other national full service network. (And there are no surcharges for communications or 1200 baud access!)

IF YOU DON'T HAVE A MODEM, ORDER ONE FOR ONLY \$34.95

If the only thing standing between you and QuantumLink is the lack of a modem, don't wait another minute. Use the coupon below to order a Commodore 300 baud modem from us at the special low price of \$34.95

Commodore and Commodore 64 are registered trademarks of Commodore Electronics Limited. Commodore 128 is a trademark of Commodore Electronics Limited. Amiga is a trademark of Commodore-Amiga, Inc. QuantumLink is a trademark of Quantum Computer Services, Inc. Academic American Encyclopedia is a trademark of Grolier Electronic Publishing, Inc. USA Today Evening Update is a trademark of Gannett Co., Inc. *During your first month.

"New QuantumLink is so easy to use, affordable and useful, it's the ideal on-line service for Commodore owners."

—Louis F. Sander
Noted Computer Columnist

30 DAY TRIAL OFFER.

Try new QuantumLink for 30 days for only \$9.95. If you're not completely satisfied you'll get a full refund during the first 30 days.

Quantum Computer Services, Inc.

8620 Westwood Center Drive, Vienna, VA 22180

☐ I have a modem and I want to try QuantumLink for 30 days for \$9.95. Please send me the QuantumLink software and user's kit.

Name _____

Address _____

City _____ State _____ Zip _____

☐ I need a modem. Please send me a Commodore 300 baud modem, and the QuantumLink software. Charge my credit card \$34.95

Credit Card: ☐ MasterCard ☐ Visa

Account Number _____ Exp. Date _____

Signature _____

The Commodore® Connection.

QUANTUMLINK™

To get on-line faster call

1-800-392-8200

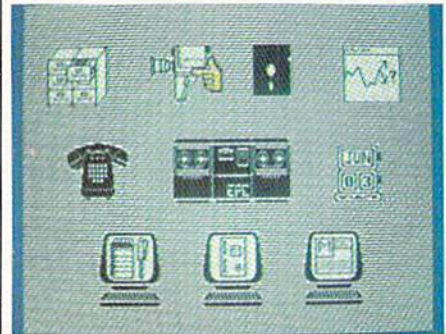
 ask for Cindy.

The Fourth Protocol

Computer: Commodore 64/128
Publisher: Bantam Electronic Publishing
 666 Fifth Avenue
 New York, NY 10103
Medium: Disk
Price: \$34.95

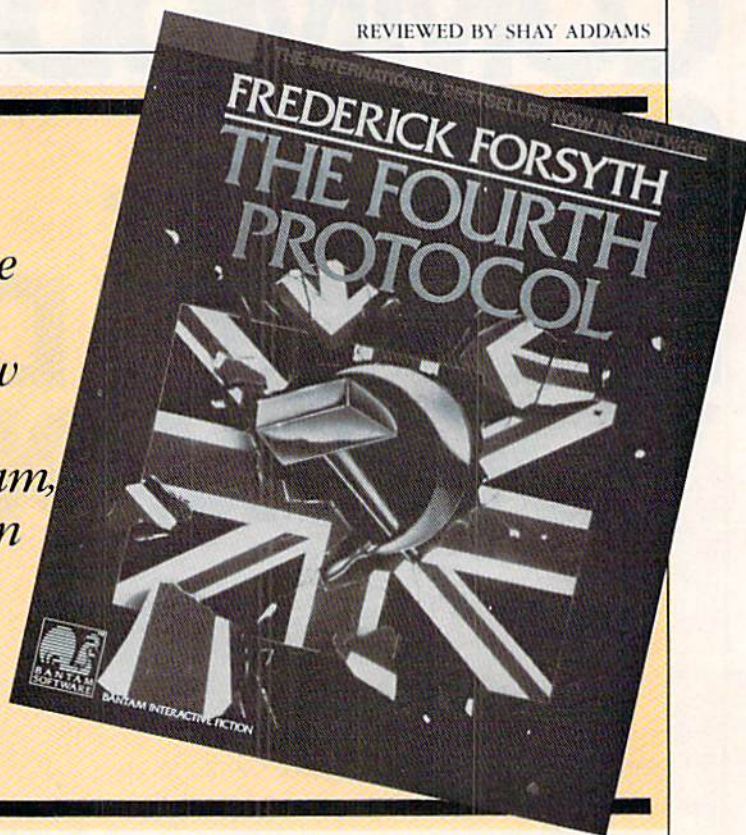
All the novels so far adapted as adventure games have been science fiction or fantasy stories like *Hitchhiker's Guide* and *Dragonworld*. Soon to be released by Bantam Software, *The Fourth Protocol* marks the next phase of interactive fiction: It is the first spy thriller by a bestselling author to be "adventurized." Frederick Forsyth's story concerns a Russian plot to smuggle an atomic bomb into England, explode it and then blame the catastrophe on an accident at an American military base. They hope the negative backlash from the public will lead to the election of a leftist government in England, one that will quit NATO and make it easier for the Russians to take over Europe.

The plot of Forsyth's story is convoluted, perhaps the reason game designers John Lamshead and Gordon Paterson devised a presentation that differs radically from *Zork*-style adventures. This game uses icons—not a parser—for inputting commands, and the game's responses appear in windows instead of being displayed in a



screenful of text. Also, it is divided into three games, all on the same disk, that are played sequentially. In the first, "The NATO Documents," you, as British agent John Preston, must find the traitor who recently gave five top secret documents to the Russians.

An exclusive look at an exciting new adventure from Bantam, soon to be in a store near you.



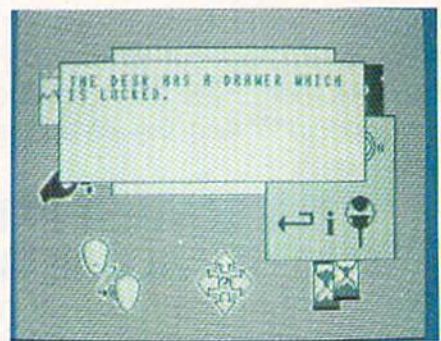
Rather than solving object-oriented puzzles as in a standard adventure, you have to analyze information about various suspects, formulate a surveillance plan, and act appropriately on your findings.

Eight icons represent the various activities you may conduct from your office at Cencom, the central communications section of MI5 (England's counterpart to our CIA). By pressing a key, you easily move a hand-shaped cursor around the icons, then press RETURN or the firebutton to select one. Occasionally you might need to type a secret password or other brief messages.

When an icon is activated, a new window opens up and offers several more icons. Choose the telephone icon and, in the new window, you'll see three more: one for answering the phone when it rings, another for making calls, and a third for putting callers on hold. The caller's words show up in a window labeled "message pad." By selecting a file cabinet icon, you can store a message and look it up later by typing in the name under which it was filed.

One of the first phone calls alerts you that clues about the NATO papers await in the computer at Blenheim, MI5's archives. Rather than trundle over, you can ring them up and have

the files "modemed" to your office. (It's a lot like downloading CompuServe files.) Of course, you won't be able to access the archives without a password. Another phone call fur-



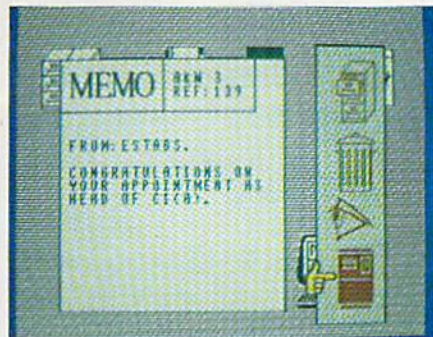
nishes a coded series of numbers that you convert into the password by deciphering them with one of three "decoder pads" in the manual.

The Blenheim files name dozens of British agents who had access to the NATO papers, so you must apply deductive reasoning to determine which are the likeliest suspects. To complicate matters, other agents phone in with the names of more British personnel who have been acting suspiciously. Most turn out to be red herrings, but you'll have to sift through quite a few clues before narrowing down the list of suspects. And you can't just check out the suspects on a trial-and-error basis and hope some-

EXCLUSIVE SOFTWARE REVIEW

thing turns up, because the culprit will ditch vital evidence early on. Time is constantly passing (unless you freeze the action), and you have only from June 1 to July 11 before being pulled off the case. You can accelerate the action by advancing a day ahead with the calendar icon.

To spy on people, you choose the icon shaped like a video camera. This brings up icons that let you assign up to 25 "watchers" to follow each "target" whose name you type in. (The game's text is interspersed with similar spy jargon, all defined in the man-



ual's glossary.) When a watcher has something to report, a message pops up in a computer-screen icon. You can read it by selecting that icon, and the report may lead to other suspects to investigate.

Two similar icons provide intermittent reports and memos from other sections of MI5 and from your boss, Brian Harcourt-Smith. He will prompt you for decisions concerning new evidence reported by the watchers. After a British woman is observed meeting with a foreign spy, for example, a window displays a memo asking if you want to arrest her, interrogate her, or choose one of several other actions from the menu. Ultimately, you must adopt the mindset of an intelligence agent and learn to think like a spy in order to determine the traitor's identity.

Scoring is of two types: prestige and progress. Prestige tells how efficiently you're managing your watchers. You begin with 100 and will lose some or get more depending on your prestige score. The progress rating reflects your success in solving the case, as well as how you deal with other security problems that crop up during the game. (It is possible to complete game one without attaining the top progress score of 100%.) When you

think you've uncovered the traitor, you can call Sir Anthony, who will ask a series of questions. If they are answered correctly, you'll receive the password needed to play the second game.

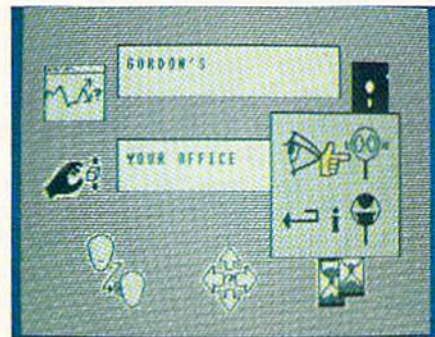
Game two, "The Bomb," feels more like a standard adventure, for you can leave your office and explore London by foot, taxi and subway to find the location of the Russian nuclear bomb. An icon-based interface simplifies choosing directions: You move the cursor to one of four arrows and press RETURN to go north, south, east or west. Other mini-icons symbolize climbing up and down stairs, going in and out of doors, and so on. A hand-shaped icon opens a window full of mini-icons that let you pick up, drop, and use objects.

An eye-shaped icon permits you to look at the current location as well as objects in it or in your inventory. You can talk to people, whose replies are shown in windows. In addition to finding and making proper use of objects, you'll have to draw on your map-making skills while traveling from Parliament to the Tower of London and back to headquarters. Again, you must deal with other threats—the Red November terrorists, for example—while attempting to accomplish your main goal. A "spy efficiency rating" indicates your score in game two.

Only the final game, "SAS Assault," looks and plays like a conventional adventure, employing a parser instead of icons. After typing in the password you learned by completing game two, you will find yourself in the room where the bomb is concealed. A full-screen graphic illustrates the room and its contents. There's no score: your goal is simply to find and disarm the bomb. Roving Russian agents will do their best to stop you. These killers are well-animated characters whom you'll see walking past the window and through the open door. You can type in "attack KGB" and hopefully kill them, then get busy trying to defuse the bomb until more agents rush into the room. Their incessant and random attacks generate considerable tension, and the pressure builds as you strive to remember the information (gleaned in the previous games) necessary to complete the mission.

If the guards kill you, animation and sound effects signal that the bomb has exploded. Then a paragraph of text spells out the results, which are that the Russian plot has succeeded in its long-term political goal. All three episodes are of intermediate difficulty, and you'll appreciate the disk-shaped icon that facilitates fast saving and reloading of a game in progress (though this is unavailable in the third episode).

The visually oriented interface is well-implemented and fun to play with. My chief criticism is that each window, no matter how brief its message, remains onscreen for five seconds. That's not long, but sometimes you must step through several windows to reach the one you need. You cannot simply "press button" to operate an elevator, even when you know you're standing in front of it. First you have to hit the "look" icon to elicit a description of the hall. After five seconds, another window reveals the elevator's existence, then the next one asks if you want to use it. Wading through this series of windows consumes far more time than typing "enter elevator then press button" as you would do in a parser-based game. Also, using an icon for choosing directions and moving—at least a three-step process—isn't as convenient as typing "n" for north.



But these are minor snags that affect only the second episode and even then don't substantially bog down the flow of the game, which succeeds by convincingly propelling the player into the mind of the novel's protagonist. Not just another "look behind the rock" adventure, *The Fourth Protocol* poses a stimulating set of mental challenges for adventurers who have grown weary of waving swords at trolls, rescuing princesses from evil wizards, and seeking mystic orbs. **C**

Space Shuttle

Computer: Commodore 64

Publisher: Activision
2350 Bayshore Frontage
Road
Mountain View, CA
94030

Medium: Disk

Price: \$34.95

From the moment you see *Space Shuttle* on the shelf, you know you're on to something special. The full color photo of the space shuttle illuminated by spotlights is as dramatic as the software itself. Real screenshots on the back of the box show you exactly what you can expect.

Inside the full-color flight manual, lavishly illustrated with screenshots, you go step-by-step through all the procedures from lift-off to landing—some of the best, and certainly the most attractive, documentation I've seen.

When the disk has been booted, you're treated to a view of the control panel and an out-the-window scene of blue sky and drifting clouds—presumably what a shuttle pilot sees as he is lying on his back waiting for lift-off.

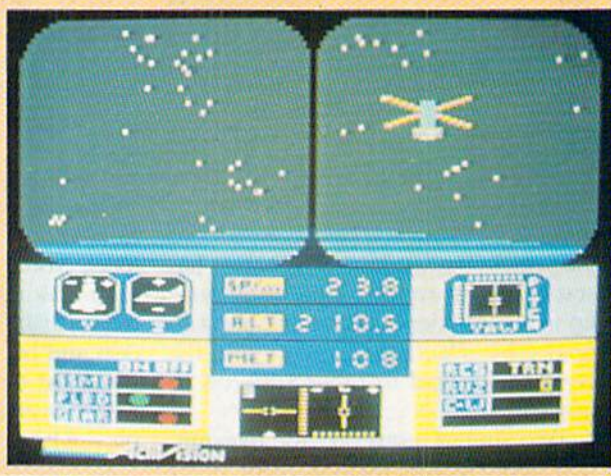
At this point, one of three levels may be selected. Level one allows you to do no wrong. While you have control over the flight path and the attitude of the Shuttle, on-board computers override most of your mistakes to prevent aborted missions.

At level two, you have partial control. Some aborts are overridden and no fuel units are used, so you have all the time in the world to complete your satellite docking mission. At level three, you are in complete control. Fuel is consumed and all abort conditions are operative.

Your mission is to fly into space, achieve the proper orbit, and rendezvous with six or more satellites. Should you accomplish this—and don't expect to do it on your first session unless you're a real shuttle pilot—and if you can land with 7,500 units of fuel—you'll achieve the rank of Commander.

Commanders receive a special hero's welcome upon landing at

*Your mission
is to fly
into space,
achieve the
proper orbit,
and
rendezvous
with six
or more
satellites.
If you can
land with
7,500 units
of fuel,
you'll achieve
the rank of
Commander.*



Edwards AFB, and a screenshot of this forwarded to Activision will award you a Shuttle Commander emblem: your wings.

The countdown begins. A keyboard overlay helps you remember all the mandatory tasks. Switch on the main engines and at T minus 4, press the joystick firebutton to lift off. There is a slight delay while the engines build power and the explosive bolts release your rocket from the launch pad, but then you're on your way.

Drifting clouds whip past your windshield as you enter the buffeting zone, the point where atmospheric density reacts against your forward movement to rattle your teeth. Your windscreen flashes red as the solid-rocket boosters are blown away, the buffeting ends, and you see the stars.

No, you're not there yet. Instead of dwelling on the stars, you must keep your eyes on the control panel, using your joystick to maintain a proper

flight path and using the fire button to maintain proper thrust from your engines.

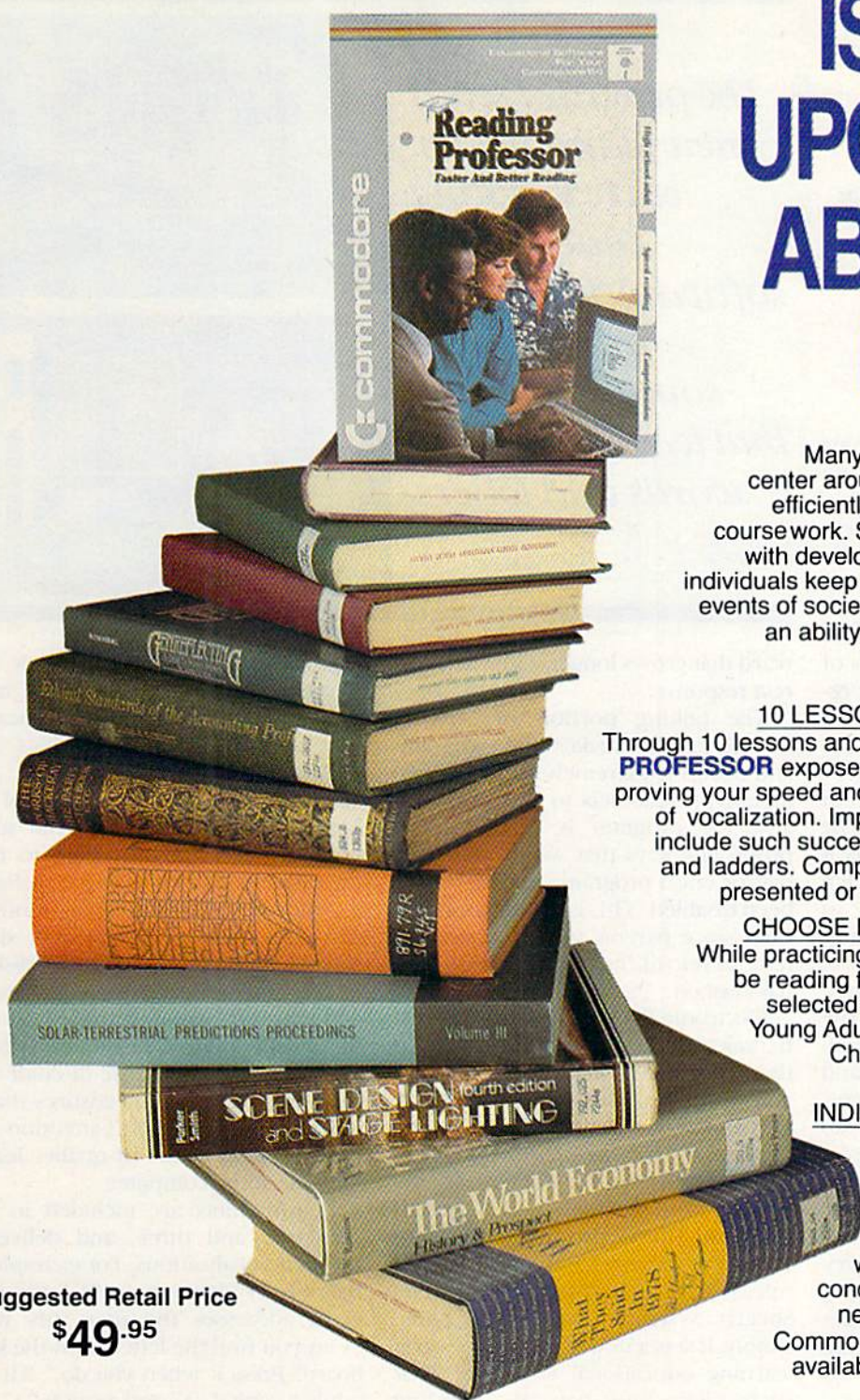
Once in orbit, rotational and translational engines allow you to correct pitch, yaw and roll, as well as altitude. Crosshair displays on the control panel help in correct centering. You may also display your X, Y and Z axis with the X, Y and Z keys.

After docking with a satellite—and I've chased some around the world without achieving rendezvous—you may choose to go home. You must rotate the shuttle to a point where you are "flying" backwards. Close your cargo bay doors and use your main engines to slow, begin your descent, then rotate once again to head toward Earth at the proper altitude.

Radar guides you along the flight path displayed on your console, but at about 160 miles, the heat of re-entry surrounds you with flashing fire and

Continued on Pg. 134

THE STAIRWAY TO SUCCESS IS BUILT UPON YOUR ABILITY TO READ



Suggested Retail Price
\$49.95

Many of our important accomplishments center around our ability to read—quickly and efficiently. Good students keep up with their coursework. Successful professionals keep pace with developments in their field. Well-informed individuals keep abreast of the constantly changing events of society. To assist you in developing such an ability, Commodore proudly presents the **READING PROFESSOR.**

10 LESSONS AND 7 PROVEN EXERCISES
Through 10 lessons and 7 proven exercises, the **READING PROFESSOR** exposes you to various techniques for improving your speed and comprehension. Correct the habit of vocalization. Improve your concentration. Exercises include such successful methods as the tachistoscope and ladders. Complete each one in the order they are presented or select them individually as desired.

CHOOSE FROM A TOTAL OF 96 PASSAGES
While practicing these various techniques, you will be reading from a variety of different passages selected for each of three different levels—Young Adult, College-Adult, and Professional. Choose from classic or contemporary literature, books or periodicals.

INDIVIDUALIZED PROFILE REPORTS
And to keep you informed of your progress, a Profile Report is available which graphically updates your improvement. It even helps you identify areas in which you are weak so that you can concentrate your efforts where they are needed the most. Whether you own a Commodore 64 or Plus/4, there is a version available for you. Begin your climb today!

COMMODORE
EDUCATIONAL SOFTWARE

Talking Teacher

Computer: Commodore 64

Publisher: Imagic

Address: 10000 Bayshore Frontage

City: San Mateo, CA

State: CA 94401

Medium: 5.25 1.44 drives not

supported

Price: \$49.95

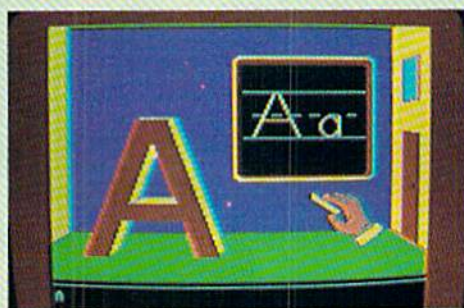
If you have a youngster in your household between the ages of two and seven, here's one program for you. *Talking Teacher* contains three learning lessons for young children. By using these lessons, the child can learn capital and lower-case letter identification and letter location; a basic vocabulary and pronunciation of more than 150 words; and spatial relationships. All user input is handled through the mouse, teaching the layout of the screen in the process.

Lesson one is intended for users in the two through five age group. The program begins by teaching letter as it is typed. It then goes on to teach typed the alphabet, and provides an excellent introduction for reading skills.

Lesson two is intended for three through six-year-olds. It takes the youngster through the alphabet, showing how each letter is pronounced and used in a word. Each letter is correctly pronounced to the audio and visual feedback of an animal, creature or object that has to do with that letter. It's as simple as pressing the right letter on the keyboard in a pastoral countryside scene. This stationary screen is transformed into scrolling screens as the child of the alphabet progresses. As the child reaches Z, an impressive menagerie appears.

In lesson three, the child is asked to identify the letter of the words presented in lesson two. This section is designed for children in the four through six age range. Any mistakes are remembered and reviewed at the end of the lesson. Correct answers are given a musical re-

The program sets a new standard for early learning educational software, with clear and natural sounding speech that teaches over 150 words and letters.



ward that grows longer with each correct response.

The talking portion of *Talking Teacher* really makes the program, and makes it extremely easy for non-literate preschoolers to use. Additionally, the program is totally crash-proof; any keys that would normally halt or crash program execution have been disabled. This is a very good feature, since parents won't continually have to reload the program because it has crashed.

Electronic Speech Systems (ESS) of Berkeley, California, is responsible for the speech used in the program. If you've played *Impossible Mission*, *Ghostbusters*, *Cave of the Word Wizard*, *Slap Shot*, *Kennedy Approach*, or *Beach Head II*, then you're already familiar with the high-quality speech used in these products. *Talking Teacher* is the most ambitious product released to date using Electronic Speech Systems' technology. Quite simply, it sets a new standard for early learning educational software. That such clear and natural sounding speech is possible entirely through programming, without the use of external hardware for playback, is absolutely amazing. Just saying I was impressed is an understatement; perhaps speechless comes closer.

In addition to the superb quality of the speech, *Talking Teacher's* vocabu-

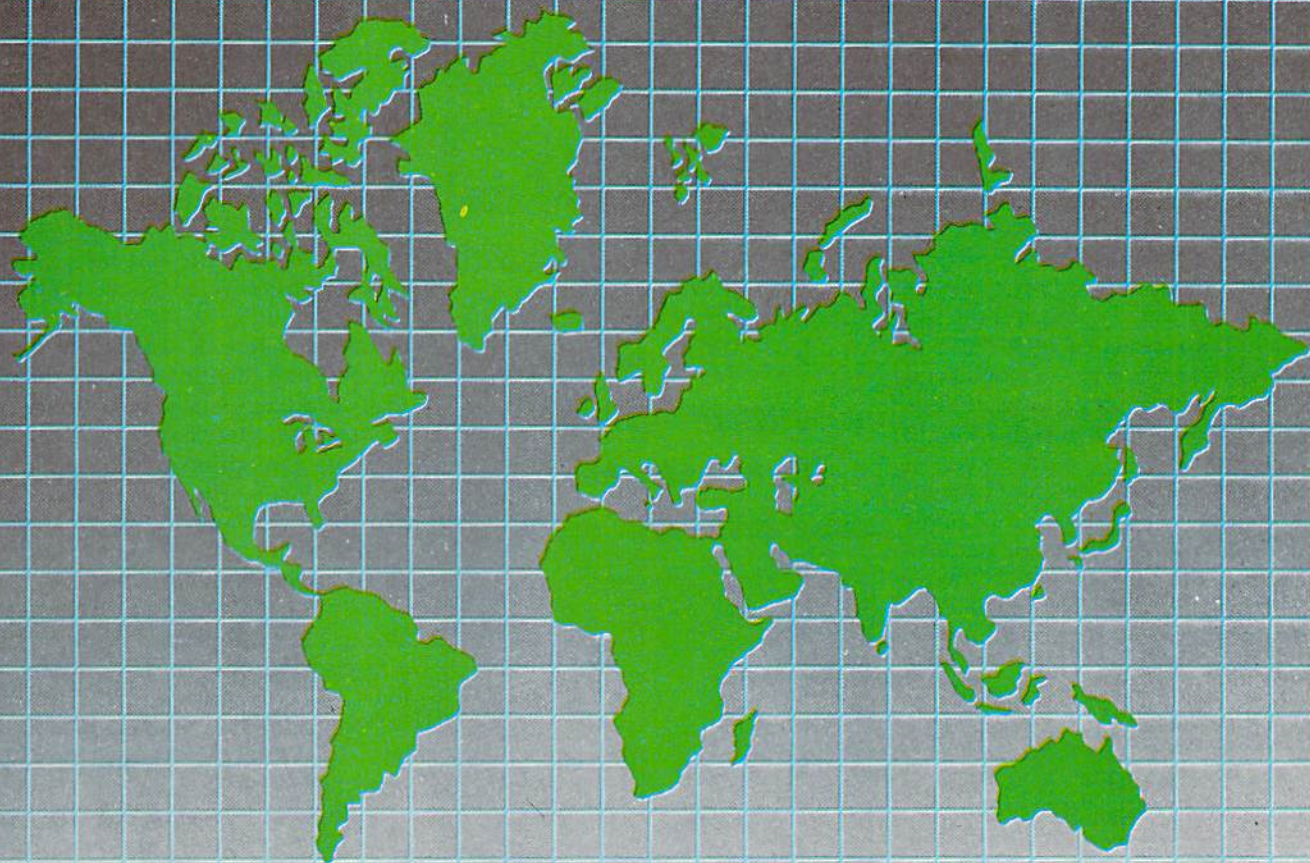
lary is extensive, with well over 150 words and letters. To store the massive bytes that comprise the vocabulary, speech routines, graphics and program code, Imagic went the "flippy" route, using both sides of the same disk. Upon loading the main program, you are instructed to take the disk out, turn it over and reinsert it, followed by a RETURN to continue the load. I like this approach, since everything is contained on one disk.

The graphics and animation are as good as the synthetic speech, as are the excellent music and sound effects. The program's lavish use of color and easily identified forms ensures that it will hold the youngster's attention and provide many hours of quality learning time at the computer.

Helpful hints are included in lessons two and three, and delivered through vocalizations. For example, if the "target" letter is an "A," the program addresses the user this way: "Can you find the letter A on the keyboard? Press it when you do." All the while a capital "A" and a small "a" are displayed on-screen to help identify it. If the child doesn't respond within a few seconds, the voice says "If you need help finding the letter A, press any key." By pressing any key, the child will receive directions as to where the "A" may be found on the

Continued on Pg. 135

SCENERY DISKS *for* FLIGHT SIMULATOR II



SubLOGIC Scenery Disks expand the potential flying environment of Flight Simulator II and Microsoft Flight Simulator.

Twelve separate Scenery Disks cover the entire continental United States. Each disk covers a geographical region of the country, and includes the major airports, radio-nav aids, cities, highways, rivers, and lakes located in that region. Enough detail is available on each disk for either visual or instrument cross-country navigation.

A STAR Scenery Disk (available 4th quarter 1985) covers a smaller area with a relatively dense amount of scenery. STAR Scenery Disks are primarily intended for visual flight sight-seeing. They include buildings and landmarks, as well as detailed renditions of all major airports in the area.

Individual Scenery Disk price: \$19.95

Western U.S. (Disks 1-6): \$99.95

— Coming Soon —

Eastern U.S. (Disks 7-12): \$99.95

See Your Dealer . . .

or write or call for more information. For direct orders please specify which disk or disk-set you want. Enclose the correct amount plus \$2.00 for shipping (\$6.00 for the six-disk set) and specify UPS or first class mail delivery. Visa, MasterCard, American Express, and Diners Club cards accepted.

Commodore 64 is a trademark of Commodore Electronics Ltd.
IBM is a registered trademark of International Business Machines Corp.

For the Commodore 64™ and IBM PC®



subLOGIC
Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995

Order Line: (800) 637-4983
(except in Illinois, Alaska, and Hawaii)

Rainbow Painter

Computer: Commodore 64

Publisher: Springboard

7807 Creekridge Circle
Minneapolis, MN 55435

Medium: Disk

Price: \$34.95

Is your child a scribbly scrawler who loves to color the sun purple and the grass orange? Or perhaps she meticulously stays within those lines, always coloring the flowers pink and the sun yellow? Both kinds of children will love *Rainbow Painter*, a colorful and exciting drawing program. *Rainbow Painter* allows your imagination to run wild.

I started with the "picture" menu, which offers a choice of 12 options, including nine categories of pictures as well as the "playground," "disk," or "mirror" options. If you'd like to color or decorate pictures which already exist, your electronic coloring book awaits. Use your keyboard or joystick to select one of the categories, from dinosaurs and birds to flowers and fairy tales.

Each category has different "pages" within it, for even more variety. For example, the animal option gives you a cute puppy or a howling coyote, while the space option offers a view of Saturn or a spaceship's view of earth. There is a total of 44 different pages to color.

The black-and-white line drawings are very well done. Most are cute or humorous, while several are downright beautiful. The rose, cardinal or space scenes, for instance, make your fingers itch.

Once you've decided on your category and loaded your picture, look to the side of your screen. You'll see your color palette displayed, with the current color shown at the bottom left. You can change colors by moving your cursor to the palette until you're next to the one you'd like—then press the joystick button. If you don't like the palette you see, choose another one from stripes and checkerboards to a pattern of a boy and his dog. You can even create your own pattern if



This program is one a novice can start out with, yet it's also one that "grows" with the child.



you desire.

You can also move to the icons depicted at the bottom of the screen. For example, the crayon icon enables you to use dozens of shapes and lines available—choose the one right for you. Or you can select the "fill" option. Return to your picture, move your cursor inside an enclosed space, and press the joystick button to fill it up with color.

Don't like the last move you've made? Use the eraser icon and it eliminates your last action. Or you can "magic slate" the whole thing by choosing the trash can icon.

We tried the fairy tale category, and decided not to go with the Jack and the Beanstalk picture, instead moving on to Rapunzel. My conservative seven year-old daughter colored Rapunzel's hair yellow, her dress blue, and completed a lovely picture which

she saved on another formatted disk.

But if you'd rather design your own drawing, that's okay. You'll head directly for the "playground." (And if you've saved some pictures you'd like to admire all over again, go to the "disk" option.)

My six year-old preferred the "playground" option. He opted for a thick line, and proceeded to draw a strange purple pattern. Then he selected the "hat of tricks" icon and chose the "box" option. Returning to his picture, he reproduced a huge purple box on the screen, and later placed several green circles at strategic points.

After a while, he decided to move on, deciding that this picture was not really a masterpiece worth saving. So he "trashed" the picture by choosing the trash can option, and then started all over again. He decided that he'd like to "color" again, so he readily moved to the picture menu and ordered up the dinosaur pictures.

The "mirror," another choice available in the main picture menu, is also a fascinating option. This choice allows you to mirror what you've drawn, sideways, up and down, or both to create exciting kaleidoscope patterns.

Springboard recommends the program for ages four on up to the teens. I suspect your four year-olds will need supervision with this program—at least until they master the use of the joystick or keyboard and understand what the simple icons mean. They'll also want you to drop everything and run and see their beautiful creations—so don't expect an uninterrupted hour when you set your small child up with this program. Your older children should be able to entertain themselves easily with this program. In fact, I see it is best-suited for children aged seven or eight and above.

Rainbow Painter is an absolutely charming program, and one I strongly recommend to parents, whether you think your children have artistic leanings or not. (Maybe there's a latent artist in your family.) The icons are recognizable and easily mastered. This program is one a novice can start out with, yet it's also one that "grows" with the child—for many hours of intriguing and creative fun.

Fly the unfriendly skies.



3D, scrolling flight simulation w. air-air & air-ground combat.

On-board computer, working gauges & 3 weapon systems.

3 skill levels, 15 scenarios, long-playing strategic depth.

You're in the cockpit of a dream machine — a bad dream for the poor sap whose tail you're waxing. You stick a silver bird up his exhaust and wince as he blossoms into fire. And then you rain down like pestilence upon the grunts in the tanks.

Skyfox. It's the fastest-selling EA

game in history. It has the most awesome, high-speed animation you've ever seen on your computer. It's played to rave reviews in every magazine. And it's yours — at your retailer — or direct from EA at (800) 227-6703 with a 14-day satisfaction or money-back guarantee.

SKYFOX™

from ELECTRONIC ARTS™



ORDERING INFORMATION & MACHINE AVAILABILITY: Visit your retailer or call (800) 227-6703 (in CA call (800) 632-7979) for VISA or MasterCard orders. To purchase by mail, send check or money order to Electronic Arts, P.O. Box 306, Half Moon Bay, CA 94019. Add \$3 for insured shipping & handling. Indicate machine version desired. Allow 1-4 weeks for delivery. Apple II family available now at \$39.95. C-64 available now at \$34.95. For a copy of our complete catalogue and direct order form, send 50¢ and a stamped, self-addressed envelope to Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403.

Mr. Do!

Computer: Commodore 64

Publisher: Datasoft

19808 Nordhoff St.
Chatsworth, CA 91311

Medium: Disk/Tape

Price: \$39.95

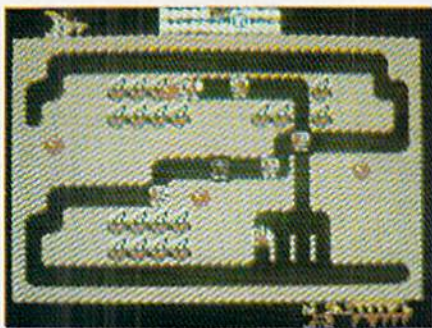
If I walked up to a group of people on the street and asked them what the name *Mr. Do!* meant to them, I'm sure that I'd get some interesting answers. Some people would immediately associate the name with a children's toy or television program, while others might claim he's a dearly departed foe of James Bond. Actually, *Mr. Do!* is a very popular video game that has recently been translated by Datasoft to the 64.

The object of *Mr. Do!* is quite simple. Travel around each field of play, picking up cherries and eating treats, while avoiding the monsters that chase you. Each screen has a different colored field and a tunnel in the shape of a letter or number. These tunnels are where the monsters run loose, until your wandering has created new tunnels. It pays to travel through old tunnels as much as possible, and avoid getting trapped in an area without an exit.

Monsters present an interesting problem in the program, because their touch means death. They're drawn to you as if they had radar, so avoid these foes whenever possible. There are four types of monsters: regular monsters, box monsters, henchmen, and diggers.

Regular monsters (red and white) are the most common species of monster. These creatures are a little unsure of their actions and frequently hesitate, giving Mr. Do an extra second or two to react to their attack. These characters are also frozen in their tracks when a treat is eaten, and remain dormant until a boss monster is destroyed.

The boss monsters are the long-legged blue-and-white creatures. Boss monsters have the habit of appearing when a treat is consumed and after 5,000 points or more are scored. Destroy these foes with a powerball as soon as one appears, or they'll mix



Mr. Do! truly brings the excitement of arcade action into your own home.

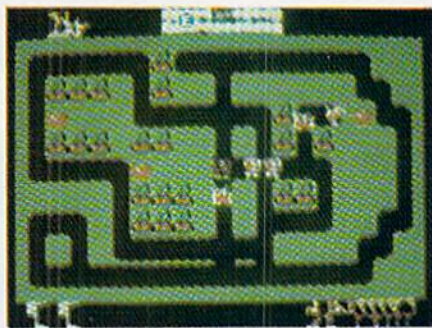
with regular monsters and be protected from your attack.

Henchmen are blue blob-shaped creatures that travel in packs, move very rapidly, and appear a moment after the treat's been eaten. Keep away from these characters, because they're the fastest monsters in the game and some can't be killed.

Diggers are the only monsters that have the ability to dig tunnels. When dealing with these monsters in general, a smart player will travel around the screen until a pack of enemies develops behind him. At this point, lure your enemies into a trap by tunneling up underneath an apple, and dropping it on them. After all of the regular monsters have been released from the center of the screen, a treat, in the form of cake or pudding, will appear there.

Now you have a decision to make: Consume the treat for big points and face the fury of the henchman, or continue eating cherries while battling regular monsters.

Joystick controls in *Mr. Do!* are so simple to use, that even very young children can play the game. The powerball, released by pressing the fire button, is also very easy to use. This lethal weapon destroys any type of monster on contact. The player should remember to use the ball to destroy boss monsters, while keeping it handy at other times as an emergency weapon, because once a powerball



has destroyed a target, you're helpless for about seven seconds.

The graphics generated in the home version of *Mr. Do!* are very close to those found in the original arcade game. Object graphics, like apples and cherries, are simple colored figures with an additional color or two being added to give details to the image. Mr. Do, the hero of the game, is a white-faced clown dressed in traditional circus attire of red-and-white polka-dots.

Two animated graphic sequences in the program provide a break from the game. Whenever a player completes a group of three scenes, a screen shows the score of each while a monster races across the screen. It has good reason to run so fast, because Mr. Do is in hot pursuit, carrying an apple to drop on the beast. Another special screen comes up when you've earned an extra man. This screen shows our favorite clown standing beside a monster. Mr. Do badgers the monster until it raises a white flag. While waving the flag, the monster surrenders an extra man to the bottom of the screen.

Several variations of circus music are played throughout the program, adding a touch of the "Big Top" to the game. The player also knows when a boss monster appears, because the music changes.

After working with *Mr. Do!* for several days, I judge it to be one of the best all around games for several reasons. First of all, the program appeals to both children and adults. Children above the age of five should be able to understand and play the game, while adults like its fantasy aspect. *Mr. Do!* also offers a variety of challenges. The program is a fine blend of excellent graphics, unusual sounds, and well engineered animation. This game truly brings the excitement of arcade action into your own home. **C**

• MASTERTRONIC •

With Commodore 64/128 diskettes at an amazingly low price of \$9.⁹⁹ Mastertronic brings you "top quality programs at a price that everyone can afford."

Ask for Mastertronic programs at your local dealer NOW! or contact the Mastertronic hotline by calling (301) 695-8877

THERE'S NO BEATING MASTERTRONIC!



\$9.⁹⁹
COMMODORE
64/128
PROGRAMS



Mastertronic International Inc.
73118 Grove Road, Frederick,
Maryland 21701

Quink

Computer: Commodore 64

Publisher: CBS Software
One Fawcett Place
Greenwich, CT 06836

Medium: Disk

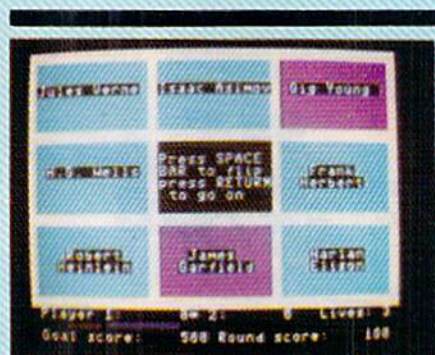
Price: \$34.95

Think quick! Here's a series of words. Tell me which ones don't belong: Mojave, Caspian, Great Bear, Painted, Emerald Seas, Gobi, Alps. The first, fourth, and sixth are deserts. All the others should be eliminated. Caspian is a sea, Great Bear is one of the largest lakes, Mohegan is an American Indian tribe, Emerald Seas is a passenger liner, and the Alps are a mountain range.

If you're wondering who cares about the wrong answers, I have to warn you—*Quink* is a game where the wrong answers can be as important as the right ones. When the eight words light up the screen, you have a finite time to identify the ones that don't belong. If you aren't fast enough, you lose points. If you make an incorrect guess, you lose a "life." Each *Quink* game consists of three lives.

Fortunately, at the end of each screen, *Quink* lets you compare the clues with their categories. By careful observation, you can learn the ones you don't already know. And some of them are pretty off the wall. How many of the top 50 stocks can you name? Is Orlon a fabric or a man-made fiber? When you've only got a few seconds to make a decision, it's tricky. Being sure of an item's category can make a critical difference.

Quink is not an easy game, as it requires knowing a lot of trivial information. It is well designed and enjoyable, though. Since trivia games are quite popular, it's not surprising that CBS would develop a game like this. What is surprising is that it is so different from the rest. Rather than requiring instant recall of dates, places, names, or records (who won the Cy Young Award in 1972?), *Quink* encourages you to make split-second comparisons of words and recognize their similarities. Admittedly, some of the items are really subjective, but be-



Rather than requiring instant recall of dates, places, names, or records, Quink encourages you to make split-second comparisons of words and recognize their similarities.



cause you get the relevant categories with each clue, it isn't too difficult to adjust to *Quink*'s idiosyncrasies.

With five general areas (fame, pop culture, science and nature, imagination and general knowledge), there's something to appeal to just about any taste. If you have a hard time making up your mind, there's also a "mixed bag" category.

Fame deals with people whose names may or may not be familiar, depending on your interests. Some of the "people" are fictional: characters from Dickens, the Star Wars series and cartoons, for instance. This may sound like an easy category, but how many Pulitzer prize-winning play-

wrights can you name? Can you name any Nobel laureates for literature?

Pop culture really gets into some strange (and deceptive) subjects. "Puppets," "Ventriloquist's Dummies," "It's Howdy Doody Time," "Sesame Streeters," "Best-Selling Novels of the Year," and "Pulitzer Prize Fiction" could give you a rough time. Where would you put methadone—in "prescription drugs" or "controlled substances?"

For the most part, each item falls into only one *Quink* category. Although there is most certainly a Hilton hotel in Las Vegas, Hilton falls into the "Hotel Chains" category rather than "Las Vegas Hotels." And although some metals and gases may rightly be categorized as "Chemical Elements," *Quink* makes a differentiation between them. The only way to learn which goes where is to confirm your answers at the end of each screen. The next turn doesn't commence until the RETURN key is pressed, so you can switch back and forth easily between the items and their correct categories using the space bar.

Because some categories are so trivial, even living in a particular geographic area can be an advantage. Most people would have a hard time with a screen that listed Song of America, Nordic Prince, Norway, Titanic, Austin, St. Croix, and Bull Run. With little trouble, most players would recognize Bull Run as being the only famous battle and Austin the only state capital. Being a Floridian, I'm within a few hundred miles of St. Croix and know it's a Caribbean Island. And our last apartment overlooked the Port of Miami, home to the Song of America, the Norway, and the Nordic Prince. All are passenger liners. Most players would put the Titanic in the same category. But no, it belongs in the "Famous Ships" category.

Within 4,500 clues and eight items per screen, this game can have millions of variations. Even at the easiest level, it's no party. Although billed as a family game, I question how many youngsters will be able to effectively compete in this game. The categories are quite complicated, and even a well

Continued on Pg. 133

For Business, Doctor's and Home Phones

10 Ways Moog's Advanced Model Phone Controller Can Increase the Service You Get From Your Phone, Speed Your Calls and Lower Your Charges.

A high-tech advance by Moog, who invented the Electronic Music Synthesizer

This small electronic marvel—only 8" by 6" by 1½"—lets you do things with your telephone you never thought possible. Read these 10 ways Moog's new Phone Controller outdates old-fashioned telephoning—

1. One Touch "Memory" Dialing.

Get at the touch of a finger 30 numbers called most frequently. Real time saver.

2. Time-Saving Callback.

Busy signal? Phone Controller calls back for you every 60 seconds, up to 14 times. Keeps you from forgetting to.

3. Digital Time Monitor.

Alerts you to minutes you are talking, long distance or locally. Keeps 5 minute calls from going to a half-hour.

4. Touch Dial Converter.

Lets you call by touch on rotary dial phone.

5. Works with MCI, Sprint, SBS.

Discount long-distance services work faster, cheaper without installation extras.

6. Hold Button.

Puts callers on hold so you can talk with others around you. More secure than hand over mouthpiece.

7. Built-In Audio Speaker.

Call without having to hold handset until someone answers. Lets others hear too.

8. Eliminates Phone Use.

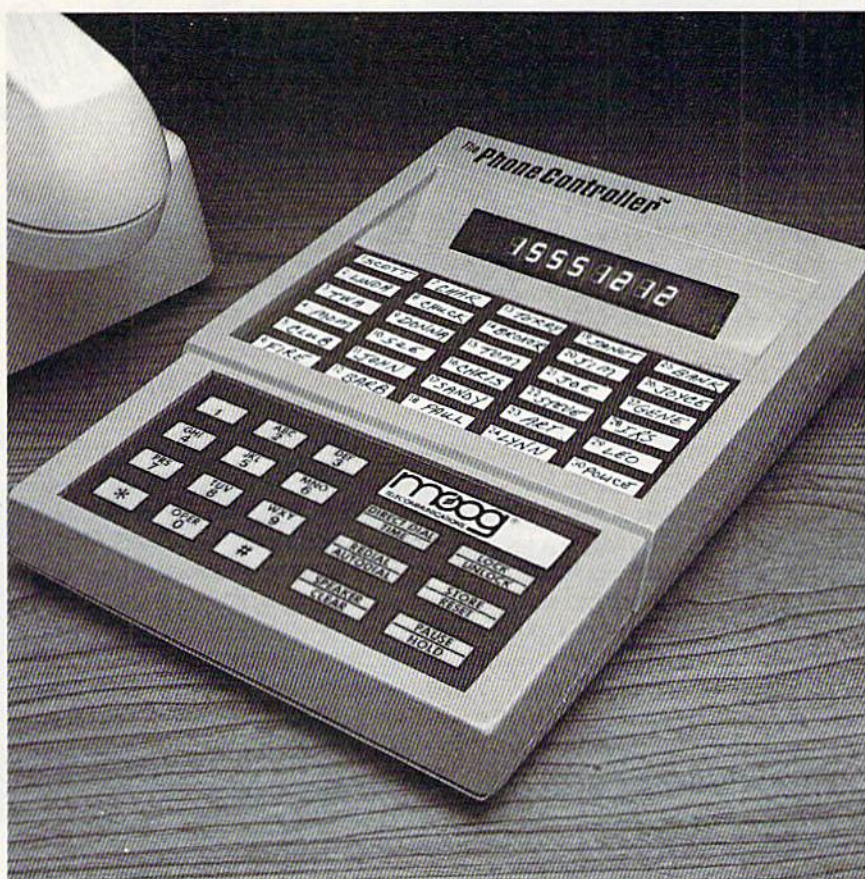
No need to dial from phone. Touch-dial directly from dial pad of Phone Controller.

9. Fail-Safe Memory.

Back-up battery power keeps programming intact and in place for most power outages.

10. Error Eraser.

Dial a single wrong number, no need to redial whole number. Push clear button, error is erased.



Satisfaction Guaranteed.

For single-line service, simply plug into any modular jack. For service with multi-lines, specify Model ML. Customers also get toll-free advice if needed.

All Phone Controllers have 1 year parts and labor warranty and are UL and FCC approved. Prompt service if needed. If you are not fully satisfied, return unit in original condition and packages within 10 days of receipt, and your money will be refunded.

Pleasantville Plan, 62 Eastview, Pleasantville, N.Y. 10570

Dept. MC-1

Please send () Moog's Phone Controller(s) at cost per instrument of \$99.95 single line, \$119.95 multi-line (Model ML.)

I enclose check () Money order () in amount of \$_____.

Or charge my AMEX () MASTERCARD () VISA () credit card no. _____

expiring _____. N.Y. residents add sales tax.

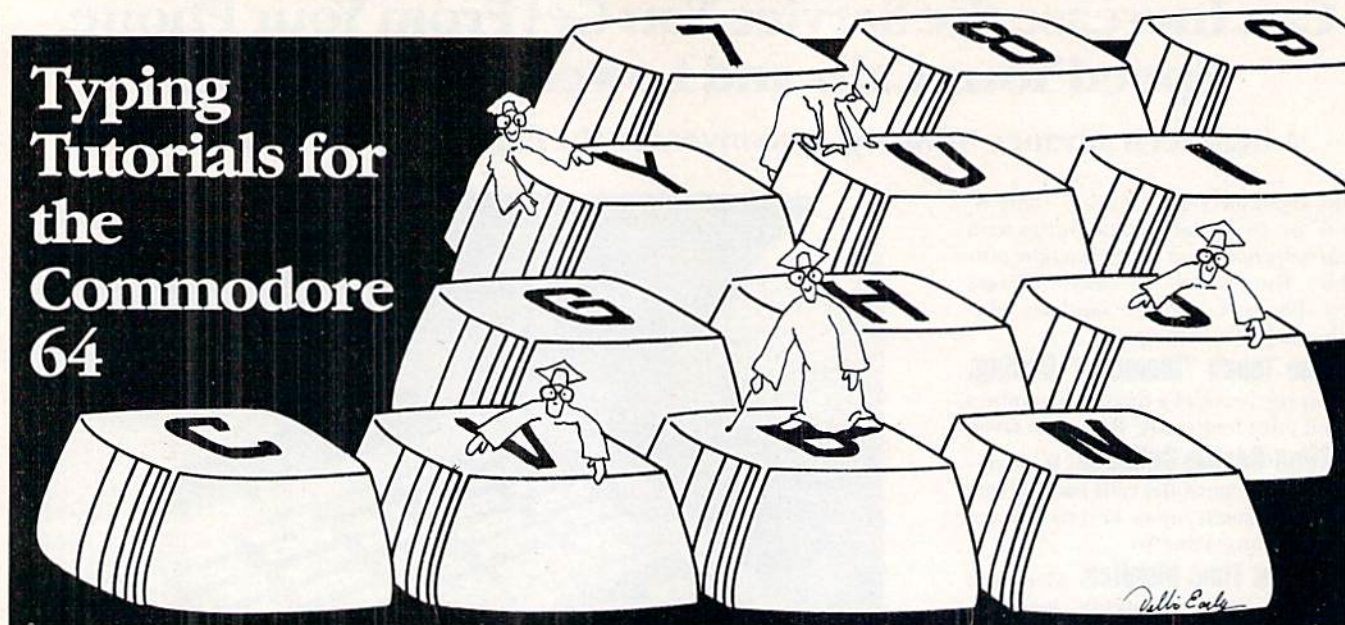
Name _____

Address _____

City _____ State _____ Zip _____

For earlier delivery, call toll-free 1-800-334-0854, 7 days, 24 hours.

Typing Tutorials for the Commodore 64

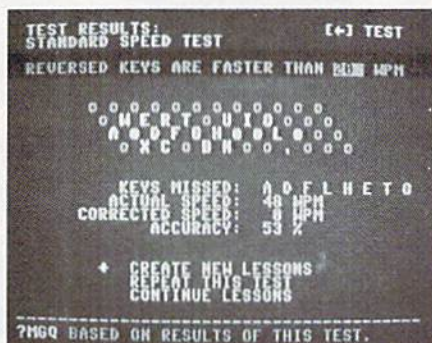


The last thing in the world I thought I'd need would be a typing tutorial program. But one day, my wife decided she wanted to improve her own typing skills and asked what we had in the way of tutorials. I was chagrined to discover that the cupboard was bare.

So I started to nose around to see what was available in the way of tutorials. I have tested six typing programs here for the Commodore 64, and each one has its own particular points—both good and bad. Some are geared for teens and adults, while others are excellent introductions to the keyboard for youngsters. Some are deadly serious, some are whimsical and fun. Some are downright funny.

As a reviewer, I use at least four different computers. The sad part of this is that the keyboards are all different, and while I may be a speed typist on one key arrangement, when I switch computers, I have to switch gears and relearn the positions of a number of keys. In a way, this makes me almost a beginning typing student all over again, which suits the purpose of these reviews just fine.

Which one of the bunch did I like the best? That's really hard to say, since I found that each one of these programs had both strong points and characteristics that I didn't particularly like. The typing tutorial that you ultimately choose will depend on your own time frame, your needs as a typist, and your age.



Typing Tutor III

It all started with my first look at *Typing Tutor III* from Simon and Schuster. This program comes in a regular hard-cover library-shelf book with the disk nicely sealed in a vinyl sleeve in the back. I must admit I'm a little partial to this program, since it's the first typing tutorial I've had a chance to try on a variety of computers. All three versions have the same ingredients, although the on-screen graphics are better for the 64.

The big problem with any typing tutorial is that it can get dead after just a short time. If you're serious about learning to type or want to improve your speed, then a serious program is appropriate. But even with a serious program like this, an element of "gamesmanship" enters the picture with the "Letter Invaders" game.

With "Letter Invaders" (loaded as a separate program and not selectable from the main *Typing Tutor* menu), your typing speed and skill really get put on the line. *Space-Invader*-like

letters start to drop from the top of the screen. Typing that letter correctly before it hits the bottom will "shoot it down," but it is quickly replaced by other letters, falling in random patterns across the top of the screen.

As you get better and more accurate, more letters, punctuation marks and numerals fall, and they come faster and faster. Eventually, even the best typist will "lose" this game, with missed letters punching holes in the "ground." When the ground's all gone, the round ends, and the program prints your scoring statistics on the screen.

In the straight tutorial section, you get your pick of drill on letters and numbers, and these, too, get harder as you improve. At the end of each two-line drill, you see an evaluation of your performance, along with raw speed, adjusted speed (after subtracting the errors), your best (fastest and most accurate) keys, and the keys that still need some work.

You can elect drills, practice sessions, and speed tests. At the end of each session, or sooner if you choose, you can see a graph of your results.

While *Typing Tutor III* is an excellent program and one I highly recommend, it's all work and very little play aside from the "Letter Invaders."

Typing Tutor

The name's almost the same, and there is an "Invaders" section of the

NOW YOU CAN PUT YOUR COMMODORE TO WORK IN YOUR GARDEN.

THE PERFECT PACKAGE FOR
COMMODORE COMPUTER OWNERS
WHO ARE GARDENERS...AND FOR
GARDENERS WHO ARE COMMODORE
COMPUTER OWNERS!

Introducing Computerized Gardening from
ORTHO — the first and only personalized gar-
dening program available on computer soft-
ware. It works by detailing plant and shrubs
by user zip codes to provide an individualized
gardening and landscaping program. Planting
requirements are listed accord-
ing to shade or sun-loving plants,
blooming or non blooming plants,
watering needs
and plant color
and others.

You'll find the
software available for
IBM, Apple II
and Commodore
Computers.

Plus, included in
the package is a copy of the new
ORTHO Book *Gardening
Techniques* — an authoritative
"how-to" that shows you in
color and detail page after
page of gardening procedure.

The ORTHO Computerized
Gardening Package is avail-
able at software outlets,
bookstores and lawn and
garden centers where
ORTHO books are sold.

Just \$49⁹⁵

For more information write:
ORTHO Information Services
575 Market Street, San Francisco, CA 94105



**ORTHO
INFORMATION SERVICES**

Commodore® is a registered trademark
of Commodore Business Machines.

Gardening Techniques

ORTHO
BOOKS

Step-by-step instructions for all basic gardening techniques
... of the plants most likely to succeed in any garden
... for the beginning gardener complete enough for the expert
... of each technique

Ortho's Computerized Gardening

ORTHO

Personalized Plant Selector Disk with 750 plants localized by zip code
192 page, full color book illustrating basic gardening techniques

A GREAT GARDENING GIFT IDEA!

SELECTION CRITERIA

Plant type	<input type="checkbox"/>	ALL C
	<input type="checkbox"/>	BLUE
Height	<input type="checkbox"/>	LAVEN
	<input type="checkbox"/>	ORAN
Colors	<input checked="" type="checkbox"/>	PINK
	<input type="checkbox"/>	PURP
Flowering Time	<input type="checkbox"/>	RED

JUST IMAGINE...

A gorilla in the city?! An octopus and bear
dancing underwater?! Sound absurd?
Not with JUST IMAGINE!



This unique educational program from Commodore lets you design stories that may be as imaginative or as true to life as you desire. Gain valuable practice in important areas such as spelling and reading, word to image association, creative writing, simple word processing—all while your imagination runs wild!

JUST IMAGINE has 9 background scenes, 25 animated characters, and 48 stationary objects from which to choose. Enough possible combinations to please even the most creative minds! Select the ones you would like to include, then use the word processor to create a descriptive, entertaining story. It's just like directing your own mini-motion picture!

JUST IMAGINE flying a kite in the park . . . diving for sunken treasure . . . staging a shootout in the old west . . .

COMMODORE 
EDUCATIONAL SOFTWARE

SOFTWARE REVIEWS

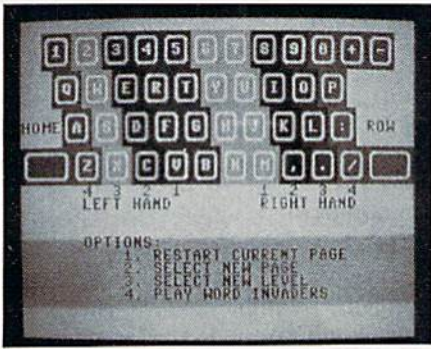
program, but that's where the similarity ends between *Typing Tutor* (Academy Software) and *Typing Tutor III*. The loading is easier, too, since the "Word Invaders" game section loads directly from a four-line menu. You don't have to leave the tutorial to get to it.

The software comes in dual formats—the package contains both a disk and a cassette tape. These people are obviously leaving nothing to chance, and are to be applauded for it.

The drill-and-practice section is somewhat uninspired, but it forces you to learn your basic keys very well indeed. The one thing I found very disquieting about this drill is that no word wrap is used. Instead, when you finish a line of drill, you must hit the RETURN key—not a good habit to get into, since most word processing programs you are likely to use never make use of the RETURN key except to end a paragraph. It's a small point, but one that I feel is important, because being used to word wrap (the software automatically moving to the next line when you run out of room), I racked up a lot of errors by forgetting to hit the RETURN key.

Yet the program has definite learning and practice value, and while the feel was different from most of the other tutorials I tested, it was indeed an excellent piece of software.

The "Word Invaders" game is cute, but instead of shooting down individual letters, you have to type the words as they appear in a line of text. You can choose your own skill and speed level, too, from a total of 16 different possible combinations. At the higher levels, a spaceship prints out a line of words faster than I can type, and as the bottom line of type that I'm working on gets closer and closer to the ground, I tend to get just a little frantic.



But unlike *Typing Tutor III*, there's an end in sight. You can actually "win" this game, and in fact, I won at all levels, including the highest one. But I couldn't maintain a consistently very high score at the highest level; some word sets are harder than others.

In general, I'd say the "Word Invaders" is a lot less threatening than *Typing Tutor III*'s "Letter Invaders," and perhaps somewhat more related to the real world of typing. Like its near-namesake, this program is for serious typing learners, in spite of the fact that it does include a game for practice purposes.



Keyboard Cadet

Maybe I'm just so full of the wonder of what computers can do that the choices available in this program were a bit mindboggling. The first choice in *Keyboard Cadet* (Mindscape) is to pick between the Qwerty and Dvorak keyboard arrangements. Frankly, this is the *only* typing tutorial I've seen that actually will teach you the Dvorak layout.

In case you're not familiar with it, the Dvorak keyboard was invented in 1936 as a more sensibly arranged keyboard that groups more frequently used keys in clusters to help you to type faster. The standard keyboard that most of us use is called the Qwerty keyboard, because this is the way the first six letters of the top row are arranged. Qwerty is used on most of the world's typewriters and keyboards. But new options are now being made available. I've seen accessory keyboards for other computers that offer the choice of switching to either keyboard.

In the nitty-gritty of the lessons and practice sessions, the screen shows you at the helm of a spaceship with a computer keyboard pictured in the bottom half of the screen. The upper

half is a view-screen showing a star-scape, and groups of letters or words flash up there for you to type. While you're typing the word, an alien spaceship appears, and if you finish the word correctly and hit the space bar, you manage to shoot the alien to smithereens. But if you're slow, or can't get the word or group finished, beware. You lose one of your "home" ships (you start with five) each time you miss or run out of time.

Keyboard Cadet also offers an excellent variety of timed typing tests that are non-repetitive. This is an especially good feature, since such timed tests in *Typing Tutor III* use the identical text material each time. The only problem with the timed test in this program is that the letters are too small for the typical composite color monitor screen. The result is that they tend to blur somewhat and can be a little hard for these age-ravaged eyes to read. I know I should get new glasses, but I can still read an 80-column screen with no problem. My conclusion is that this is a small problem with the software.

The words and letter groups in the spaceship practice sessions don't suffer from this shortcoming, however. If anything, the letters are so huge you'd have to be blind not to be able to read them easily. This program is the newest of the ones tested, so perhaps a comparison is a bit unfair, since it has many excellent elements of graphics included—along with a very good set of practice files.

One disquieting note: It's not a "full-load" program, so each time you start a new drill or exercise, there's a lot of disk-loading activity. In fact, the disk drive almost never seems to stop running while you're using the tutorial. On the plus side, this means that the master program has less to load, and will load that much faster.

The Wizard of Id's Wiztype

If comic-strip characters turn you on, *Wiztype* from Sierra can make typing drill and practice very palatable, indeed. For that matter, its comic orientation will make it much more inviting for children to take their first typing lessons.

But for all the fun of having familiar, friendly cartoon characters help you along, this program is deadly seri-

SOFTWARE REVIEWS

ous, and like all good typing programs, won't let you get away with any laziness. When you start a drill, exercise, or practice paragraph, *Wiztype* really keeps your nose to the grindstone. However, if the phone rings or you have to pause, the F7 key lets you put the program on hold; touch F7 again to restart the clock.



The practice and drill options pit the Wiz against the Sprit, who changes into a fire-breathing dragon if you're a poor typist. When this happens, he gives poor Wiz the flame-thrower-breath treatment (he must eat a lot of hot peppers), reducing Wiz to a pile of ashes. To save Wiz, you have to keep up with the words or letter groupings placed up on the screen.

This can be frustrating at first, since I for one have a tendency to set the skill level too high. After all, I am a speed typist (for whatever that's worth), and therefore reason that I should select a high speed. But the drill words tend to get ahead of me, and instead of being rewarded by the Wiz smiling at me and giving me bonus points, I see him get cremated.

A nice feature of *Wiztype* is the paragraph typing session. It's a close proximity to more real-world typing than the drills and practice words, and you can pick your poison from a menu that lists such items as the Gettysburg Address, an extended quote from Shakespeare's "Hamlet," and a paragraph of really fascinating typing trivia about world speed-typing record holders. In this case, I found myself getting more interested in the material than in the typing test itself.

In keeping with the comic-strip theme, when you make the menu selections for the paragraph practice, you can elect to have Bung, the king's perennially drunk court jester, keep pace for you. You then see Bung

jumping from letter to letter on a pogo stick to beat out the appropriate rhythm for the typing speed you selected. A hint here for more positive thinking: Set the speed slower than you normally would. Otherwise, you'll start to feel intimidated as Bung catches up to you or gets ahead of your own typing pace. A prompt at the bottom of the screen keeps running track of your net typing speed as you go along—subtracting for errors automatically.

Like most of the other software reviewed here, *Wiztype* is not a full-load program, but will load needed materials from its menus fairly quickly when you change from drill to paragraphs or whatever. It's well done, and I can recommend it for anyone who has ever been intimidated by typing.



9 to 5 Typing

Of all the typing programs reviewed here, this one from Epyx is undoubtedly the most fun, although I personally feel that the program has a few drawbacks. The opening tutorials—all menu-chosen—start the rank beginner from proper finger placement and offer programs for individual letter practice and then to word clusters. The fun starts the minute you start practicing. This program is peopled with animated computer-screen characters that emulate the stars of the movie "9 to 5," complete with Franklin Hart chasing Dora Lee around the office to the accompaniment of some upbeat, funky music taken from the soundtrack.

Both the chase and the music have a definite bearing on this typing drill, since the music provides an introductory beat to prepare you for the rhythm of the typing practice. The chase and its results depend on how well or poorly you type. If you type

enough correct letters, Dora Lee is able to increase her lead ahead of her boss, and at the end of the drill she starts chasing him! Make too many mistakes, and he catches her. You want to keep at it because it's so much fun, and that's all to the good.

When you practice the home and top row keys, Judy starts shooting at Mr. Hart, and takes a shot at him with each correct letter you type. If you make too many errors, Hart grabs Judy and her rifle. For the full alphabet practice, Dora Lee twirls her lasso and if you do well, she gets to rope Mr. Hart. Too many errors, and she gets tangled up in the rope herself.

Now the bad parts. For one thing, there is no word-wrap; instead, you have to hit RETURN at the end of each line. When you reach this point, the program rings a typewriter-like bell to signal time for a return. This is fine if you're learning to use a typewriter; it's not so fine if you plan to spend your time typing at a computer which usually has automatic word wrap.

The other problem I had with this drill was the two-line display. Maybe it's my own predilections that got in the way, but I found myself trying to type the second line of text instead of the first. The screen is set up in such a way that your eye falls naturally on that line, and the result was that I cranked up an impressive number of typing errors.

Other practice sessions include phrases and sentences, tales and facts of paragraphs, and then an optional section in which you can create your own typing programs or pick a number of special options. The really interesting aspect of this choice is the fact that you can create your own disk of exercises.

Overall, I'd rate 9 to 5 very high on the list for ingenuity, positive feedback to the typing student, and just plain fun.

Mastertype

This tutorial from Scarborough is the only one that comes on two disks. It's also available in a ROM cartridge version, which is designed to work with a cassette tape recorder. The ROM version doesn't contain some of the features of the disk version, though, in spite of the fact that it offers the convenience of in-

HOW TO GET OVER \$2000 WORTH OF NEW CAPABILITIES FOR YOUR COMMODORE 64™



FOR \$599*

The Spartan™ is the Apple™ II+ emulator for your Commodore 64™ that will open up a whole new world of hardware and software for you! Imagine adding these features to your Commodore 64™ for the Spartan™ price of \$599: ☐ Apple™ II+ hardware and software capabilities ☐ 64K RAM expansion ☐ four software selectable Commodore 64™ cartridge slots ☐ non-dedicated 8-bit parallel port ☐ standard audio cassette deck capabilities for your C-64™.

The suggested retail value of comparable products offering only these capabilities is over \$2200.00* — but the Spartan™ gives you much, much more! By building on your investment in your Commodore 64™ — an excellent introductory computer — you create a whole new system with both C-64™ and Apple™ II+ capabilities. There is a whole other world out there! The huge selection of Apple™ II+ hardware and software is now yours to explore! Call toll free for the Spartan™ dealer nearest you.

*All prices quoted are in U.S. funds, freight and taxes not included. Value of components equivalent to the Spartan™ system are quoted from Apple™ II+ CPU and Apple™ II+ single disk drive 1983 list prices, and from current suggested list prices and component specifications of other peripheral manufacturers. Commodore 64™ and Commodore logo are trademarks of Commodore Electronics Ltd. and/or Commodore Business Machines, Inc. Apple™ II+ is a trademark of Apple Computer Inc. Spartan™ is a trademark of Mimic Systems Inc. and has no association with Commodore Electronics or Apple Computer Inc. The Spartan™ is manufactured by Mimic Systems Inc. under license granted by ATG Electronics Inc. of Victoria, B.C. Canada.



MIMIC

FOR INFORMATION WRITE:
MIMIC SYSTEMS INC.
1112 FORT ST., FL. 6B
VICTORIA, B.C.
CANADA V8V 4V2

TO ORDER CALL:
1-800-MODULAR
(663-8527)

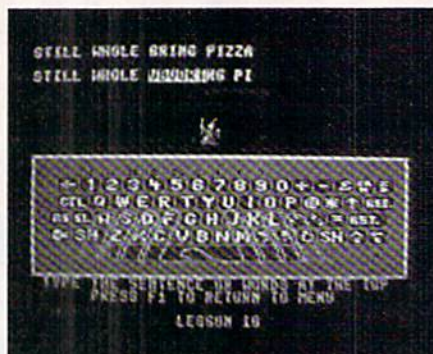
SOFTWARE REVIEWS

stant loading.

The program contains the usual home key, and upper- and lower-row key drills. A graphic of the keyboard shows where to place the finger for each letter that is to be typed. A miniature "wizard" keeps time for you, and if you make mistakes, he comes out of his corner and "shoots" the wrong letters, reversing them on the screen.

Like all of the other tutorials, this program is menu-driven, and you can exit to the master menu at any time with a press of the F1 key. It provides a "game" mode, in which two wizards shoot down circling letters with lightning bolts as you type the right keys. In addition, you can set your level and speed, and the program keeps score for you with a running cumulative total.

The game on the second disk pits your saucer-shaped spaceship against four enemy vessels which approach from the four corners of the screen. You shoot these bad guys by typing the letter displayed in each ship's cor-



ner. If you take too long, they hit your spaceship and destroy the shields.

Mastertype lets you create your own lessons and save them to disk—a definite advantage for specific kinds of drills. The manual recommends using a separate data disk for this. The option I found most fascinating presents you with computer BASIC programming words to type—a definite plus in learning to type accurately for programming.

Overall, while *Mastertype* may not be as much fun as some of the other programs and may seem a bit heavy-handed at times, in many ways it was

the standout of the programs tested, mainly because of its focus on the computer keyboard instead of the typewriter.

Typing Tutor III

Simon & Schuster
1230 Avenue of the Americas
New York, NY 10020

Typing Tutor

Academy Software
P.O. Box 6277
San Rafael, CA 94903

Keyboard Cadet

Mindscape
3444 Dundee Road
Northbrook, IL 60062

Wiztype

Sierra
P.O. Box 485
Coarsegold, CA 93614

9 to 5 Typing

Epyx
1043 Kiel Court
Sunnyvale, CA 94089

Mastertype

Scarborough
55 North Broadway
Tarrytown, NY 10591

C

SOFTWARE-OF-THE-MONTH CLUB®

(division of O.C.S., Inc.)

We guarantee you'll never again buy useless software for your personal computer.

CLUB MEMBERSHIP OFFERS BIG SAVINGS

NO OBLIGATIONS

When you enroll you will

- Keep only the software that you can use. Examine for a full 10 days; if it's not what you want, return it—with no obligations.
- Receive discounts up to 30% on your software choices.
- Be eligible for our Bonus Point Plan—additional discounts applied toward purchases.
- Receive our informative monthly newsletter full of helpful tips for getting the most from your Commodore-64.
- Receive notice of Special Sales where you'll save as much as 50% off list.

Because we support what we sell, our Technical Staff will assist you with any questions you may have.

Enroll now and receive absolutely free Public Domain Software.

Please check ☐ Cassette ☐ Disk

GREAT IDEA! I can't lose. Enroll me now in the Commodore-64 Software-of-the-Month Club. I understand there is no obligation. Enclosed is my \$10 membership fee.

☐ Check ☐ Money Order ☐ Bank Card

Name _____

Address _____

City/State/Zip _____

Visa/MC# _____ Expiration date _____

Signature _____

Cut out and mail today to

SOFTWARE-OF-THE-MONTH CLUB
Ohio Computer Services, Inc.
P.O. Box 128723
Cincinnati, Ohio 45212

pp

MONEY

...MANAGEMENT JUST GOT EASIER!

THE BOTTOM LINE—NOW ONLY \$35.00

- ★ POWERFUL, EASY TO USE GENERAL LEDGER PROGRAM FOR SCHOOL, HOME, OR SMALL BUSINESS
- ★ HANDLES UP TO 99 SEPARATE ACCOUNTS
- ★ UP TO 80,000 ENTRIES PER JOURNAL
- ★ PRINTS REPORTS FOR THE ENTIRE JOURNAL OR FOR INDIVIDUAL ACCOUNTS
- ★ ALLOWS FOR CUSTOMIZED COMMENTS ON REPORTS - TO DEPARTMENT HEADS FOR EXAMPLE
- ★ DEFINE NEW ACCOUNTS AT ANY TIME - EASY TO SCAN, EDIT, OR DELETE INFORMATION
- ★ INCLUDES MANUAL BUT CAN BE RUN FROM SCREEN PROMPTS

FOR COMMODORE 64, 32K PET, APPLE II FAMILY
- DISKS ONLY -

FREE TRIAL IN YOUR SCHOOL FOR 30 DAYS

Please Add \$2.00 Per Order For Postage and Handling
SEND FOR OUR FLYER OF OTHER USEFUL SOFTWARE
WRITTEN BY TEACHERS FOR TEACHERS



MIDWEST SOFTWARE

Box 214 Farmington, MI 48024
Phone (313) 477-0897
VISA / MASTERCARD



Photo by: Bobbi
Grenada, California

*Trademark of Commodore Business Machines

Give your 1541* Disk Drive a brain transplant!

Simply plug the **STARDOS ROM** Chip into the drive unit and insert the **STARDOS** cartridge. That's all you need to do to complete a transplant procedure that will give your Disk Drive and Computer higher intelligence.

Other Quick Loaders and Fast Loaders try to 'Patch' the DOS of the Disk Drive. This does not significantly speed up much of today's Software and sometimes it fails to load altogether.

But, **STARDOS** electronically replaces the entire DOS and KERNAL. This means **STARDOS** will speed-up finding records in your Database, any changes you wish to make to your Spreadsheet and playing your favorite adventure or other Disk Intensive work with your C-64*.

The **STARDOS** transplant offers:

Speed..... for 'All Types' of Disk Access at an incredible 600%-1000% faster!

Reliability..... end overheating and "SAVE @ O:" woes!

Convenience.. with single key load, SAVE, and Directory Etc. Built in File and Disk Copiers!

Power..... full Word Processor, M.L. Monitor and Sector Editor, Screen Dumps to Printer and lots more!

Compatibility. *STARDOS* works with virtually all C-64* Software and Hardware!

Guarantee..... 120 day repair or replacement warranty. Your satisfaction guaranteed or your money is refunded!

The power of a Computer is a terrible thing to waste. Help your C-64* live up to its full potential...Transplant with the very best!...Transplant with **STARDOS**!

Personalize your C-64* for a \$10 (non-refundable) charge. We will include a 21 character power-on message with your favorite screen, border and text colors. **Example:**

MIKE'S COMMODORE-64
Background BLACK Border GREEN Text RED

Write or phone for additional information.

STARPOINT SOFTWARE

Star Route 10 Gazelle, California 96034 (916) 435-2371

When ordering by mail:
\$64.95 + 3.00 shipping
\$64.95 + 4.00 COD orders

Shipping out of USA \$6.00
California residents add 6% sales tax
VISA or Mastercard accepted

Please allow 4-6 weeks for delivery

Better Working Spreadsheet

Computer: Commodore 64
Publisher: Spinnaker Software
 One Kendall Square
 Cambridge, MA 02139
Medium: Disk
Price: \$49.95

Simple. Powerful. Fast. Easy-to-use. Outstanding. I can't seem to decide which word best describes Spinnaker's *Better Working Spreadsheet*, a full-featured spreadsheet with simple word processing and the search-and-sort capabilities of a data base. But whichever adjective I finally choose, Spinnaker's first in a series of home and small-business applications software is a winner.

Before I even loaded the program, I was impressed with the quality of the 140-page manual. But don't let its length scare you. It is well organized, with a table of contents, comprehensive index, and a "Quickstart" card that offers easy reference to all of the program's commands and features.

But this manual is more than just thorough, it's readable. Each feature, each command, and each function is presented clearly and supported by an example. And, of course, at any time you may access any of five different help screens (just type CTRL A). These provide you with information and menus covering all the spreadsheet operations.

The introductory unit explains basic spreadsheet operations: formatting a data disk, cursor movement, and data entry and editing conventions, along with an eight-page sample application which incorporates the most commonly used features and commands.

Better Working Spreadsheet has a 250-row by 100-column format. Its word processing feature allows you to surround your printed data with explanatory paragraphs, or include your spreadsheet as part of a brief correspondence. As in complete database-management programs, you can search and sort a column of entries ei-

This spreadsheet is easy to use, loaded with features, and has by far the best documentation I've ever seen for any applications program.



ther alphabetically or numerically. And *Better Working Spreadsheet* lets you display a group of data graphically with high-resolution bar graphs.

As with all spreadsheets, you may enter data as labels, values, or formulas. But with *Better Working Spreadsheet*, you can provide "prompts" which explain what information is expected at any particular cell location.

Better Working Spreadsheet lets you save all or part of a spreadsheet to disk or tape, and combine any number of different spreadsheets to generate reports. You can even "overlay" one set of data onto another larger spreadsheet.

The Replicate command lets you copy any cell or group of cells to another area, and you may choose whether formulas will be copied exactly or in "relative" form. With many spreadsheets, you must type in the actual coordinates of the cells that mark the beginning and end of the area you wish to copy. *Better Work-*

ing Spreadsheet offers the time-saving option of simply moving the cursor to a cell and pressing RETURN, causing the cell's coordinates to be automatically entered on the command line.

A Titles command lets you fix designated row or column headings (or both) so that they will remain in place as you scroll through cell entries. You can insert rows and columns where you need them, and can adjust your column widths from 1 to 38 characters wide, either in a given column or "globally" throughout your spreadsheet.

There are over 30 mathematical functions available, from simple addition to natural logarithms, absolute values, a random number generator, powers, roots, and trigonometric functions. You can total a range of values (SUM), or count them (COU), find the largest one (MAX), the smallest (MIN), or the average (AVG).

You may incorporate the logical operators (less than, greater than, equal to) within a formula entry so that if the result of any given calculation or comparison is true ("the contents of cell B15 is greater than or equal to 25," for example), a value of one is entered in the formula cell. Otherwise a zero is entered.

But the logical operators are most powerful when combined with the Boolean operators (AND, OR and NOT) to create the IF function. More often called "IF/THEN," these allow you to say, "If something is true, do X. If it isn't true, do Y."

And if that's not advanced enough for you, there's a Net Present Value function which will calculate the current worth of a range of values before an interest period at a specified interest rate. A feature called "programmable interaction" will also let you answer "what if" questions (often called "forecasting") by calculating countless values until a pre-defined situation is achieved. For example, this function can calculate how many more base hits Billy must get before his batting average reaches .400.

Entry of all commands is a snap, with only a few simple keystrokes. All commands begin with either the CTRL key or the slash. Just keep the reference card handy until you learn them all.

The Configure program allows you to change any number of default values. These are the pre-established values for certain features like column width, background or text color, lines per printed page, which keys will repeat when held down, and other more technical information. Any changes you make here are saved as a special file called DEFAULTS, and will affect *all* files created with the program. But you may also select this feature while designing a specific spreadsheet via the Options command. Alterations made this way will be saved only with a particular spreadsheet. For example, if you wished to modify the margin size or choose compressed print for a certain file, but not all files, you'd access the Configure page through the Options command. You may also load and incorporate any *VisiCalc* or standard DIF data files, as well as any text files created by another program.

The manual ends with a Case Study section which reinforces what was presented previously via a step-by-step home finance tutorial. This Case Study lesson is so well done, as a matter of fact, that someone with spreadsheet experience might just read this, grab the "Quickstart" reference card, and get to work.

You probably think that this is where I'll list the things about this software that I didn't like or found difficult to use, or those features I'd really have liked to see but found missing. And now's when you expect to be warned about those nasty little typos in the manual that will confuse you and lead to countless hours of frustration. Well, you can relax. Because I've been using this program for over two months, experimenting with it on an assortment of applications, and I've not found it lacking in any way.

To this point, I've used and/or reviewed at least ten different spreadsheet programs for a variety of computers, and have yet to find a better package. (And, by the way, once you've filed the warranty card, Spinnaker will send you a back-up copy of the program for \$5.00!) It is easy to use, is loaded with features, and has by far the best documentation I've ever seen for any applications program.



HOW TO TAME YOUR INFORMATION

TEAM-MATE, WRITE FILE, and HOME OFFICE are fully integrated software programs designed to manage your data so you can whip thousands of names and numbers into shape.

Use the word processor to move a paragraph or transfer text from file to file. You can even generate a form and customize it by merging information from the file manager or by merging spreadsheet numbers.

Monitor your budget, cash flow, and investments with the spreadsheet. Use it to help plan shopping and coupon use.

Keep on top of appointments, critical

dates and events with the file manager. Let it help you organize inventories, research notes, or family health records.

PLUS GRAPH creates pie charts, line graphs or bar graphs to illustrate trends, market share, and profitability.

You'll see that the performance, quality, and price will help you tame the facts with ease.



TRIOMICRO

For the C-64™, C-128™, Plus 4™ and Atari™
P.O. Box 11300, Santa Ana, CA 92711
For more information on where to buy Tri Micro Software (714) 832-6707.

LET THE GAMES BEGIN

Animated color graphics, music and sound effects create exciting entertainment that thrills the senses. Ride the winds on your magic carpet with RUG RIDER. Grow in strength and power as you prepare for the confrontation with the Evil Genie.

ENTERTAINER I provides a collection of fun, from defending the city from dreaded Trobots, to piloting your Starship through intergalactic space, to finding and destroying the Evil Warlord's nuclear reactor.

Aspiring weather newsmen can begin learning their trade with SNOWDRIFTS & SUNNY SKIES. Predict tomorrow's weather, using the weather folklore, terminology, historical patterns, and weather map found in the Main Room.

Meet the challenges of COROM, a graphic adventure. Your mission is to rescue the fair princess from the evil sorcerer, defeating moorugs, monsters, groogs, and other obstacles, on your way to victory.

Thinkers with a sense of humor will enjoy GHOST TOWN, specially designed for the Plus 4™. As a graduate parapsychology student, your assignment is to quiet the spirits who haunt the town of Rosedale.

Come experience the thrill of victory, the enjoyable agony of defeat with Tri Micro entertainment.

For the C-64™, C-128™, and Plus 4™.

For more information on where to buy Tri Micro software, call (714) 832-6707.

TRIOMICRO

P.O. Box 11300, Santa Ana, CA 92711



Power Plan-64

Computer: Commodore 64
Publisher: Abacus Software
 P.O. Box 7211
 Grand Rapids, Mi 49510
Medium: Disk
Price: \$49.95

After reviewing hundreds of programs for the 64, I feel that *Power Plan-64* is one of the best programs ever written for the Commodore, giving *Lotus 1-2-3* a run for the money. My opinion is especially bold since *Power Plan-64* costs about 14 times less than *Lotus 1-2-3*, and is much easier to learn and use. Yet the calculating power is there.

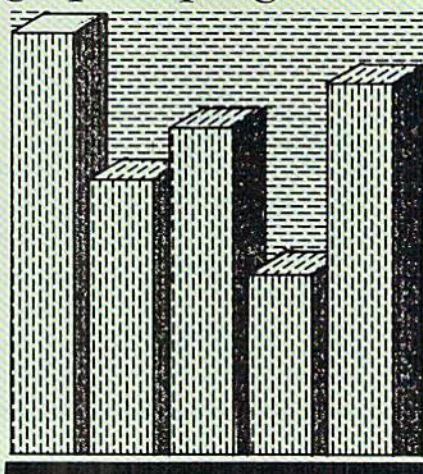
When you purchase *Power Plan-64*, you are getting two very powerful integrated software packages in one: the *Power Plan-64* "Spreadsheet Generator" and the *Power Plan-64* "Power Graph" graphics program. Both complement each other perfectly.

Spreadsheet Generator

The Spreadsheet Generator allows users to perform complex statistical problems, simulations, forecasts, and "what-if" calculations easily. The CRT screen is broken up into small memory compartments called cells. Each cell is labeled with a unique name, taken from the horizontal column axis (alphabetical letters from A to BK) and from the vertical row axis (numbers from 1 to 255). The "spreadsheet generator" has 255 rows by 63 columns, or a total of 16,065 unique compartment cells. Users can assign three different types of data into any of these cells: numerical data values, mathematical formula values, and textual information.

Textual input is important because it allows the user to self-document the spreadsheet, creating column and row headings for easy interpretation. A numerical value is nothing more than a number (integer, floating point, exponential, randomly generated) loaded into a cell as "fuel" for subsequent calculations. Formula values define the specific mathematical operations to be carried out on the raw numerical data. Formula values allow for all

Power Plan-64 is really two very powerful integrated software packages in one: a spreadsheet generator and a graphics program.



standard mathematical operators, plus all standard functions available to the 64's BASIC vocabulary (ABS, COS, SIN), plus five newly defined *Power Plan-64* functions. These specialty functions include totalling the mathematical result of cells, calculating the average value of a group of cells and number of value cells in any block, and giving the largest and smallest mathematical value of the cells.

As is typical in all spreadsheet programs, only a small window of the spreadsheet can be viewed at any one time. This, however, poses no problem, thanks to cursor directional keys, and a "GOTO" movement instruction.

The display area is divided into three portions: a top section which allows for program/user communications (data editor, available memory, cell coordinate reference frames), the central section which contains the spreadsheet proper, and a bottom section which contains an active main menu (accessible via the "F7" function key). Other editing routines are also available through various function keys.

Graphics

Power Graph is a valuable analytical tool which automatically generates various graphs (based on your spreadsheet) to help you better understand trends and relationships. Power Graph itself is worth the entire cost of the *Power Plan-64* package. The graphs are extremely detailed and accurate.

Power Graph is especially valuable because it works on any section of a user's spreadsheet, and can visually display the data in a wide variety of formats, including three-dimensional bar charts, uni- or multiple-frequency curve graphs, point graphs, minimum/maximum graphs, and two- or three-dimensional pie charts.

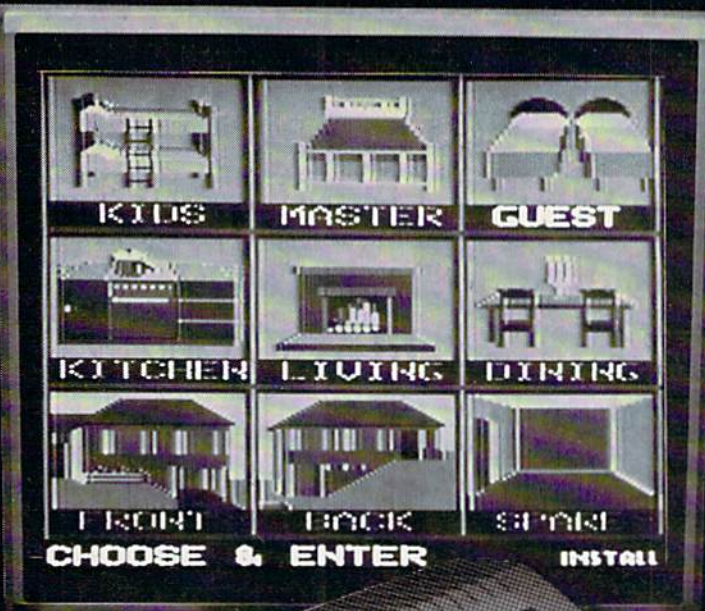
Naturally, all graphs can be produced for soft (CRT) and/or hardcopy printouts. Various graphs can be created simultaneously in several user-defined graphic windows. Also, format masks—even finished graphs themselves—can be saved to disk. Power Graph also contains a built-in text editor so you can label your creations using a variety of different type styles and sizes.

Conclusion

I recently had the opportunity to field-test *Power Plan-64* in a heavy-duty business situation. Three different spreadsheet programs were generated. One pertained to a cost/analysis problem entailing over a hundred variables, another dealt with an employee IRA annuity situation, and a third involved employee salary breakdowns and tax rates. All spreadsheets were prepared for a well-known Fortune 500 company. (My fellow analysts used *Lotus 1-2-3* and IBM AT computers.) Using *Power Plan-64*, I was able to quickly and accurately complete my assignments. My graphic depictions of simulations were as detailed as those produced using *Lotus*.

Power Plan-64's excellent 207-page user manual allowed me to completely master all of *Power Plan-64's* features in record time. If I forgot a feature, the user manual and help screens allowed me to quickly zero in on a solution. It was a pleasure to work with this amazing product. I strongly recommend *Power Plan-64* to anyone interested in using spreadsheet programs for business. 

THE X-10 POWERHOUSE DOES EVERYTHING BUT PUT OUT THE CAT.



THE X-10 POWERHOUSE INTERFACES WITH YOUR COMMODORE TO CONTROL YOUR HOME... FOR SECURITY, COMFORT AND ENERGY SAVINGS.

This remarkable interface lets you run your home through your Commodore 64 or 128 and a keyboard or joystick.

When you're away, it makes your home look lived in. When you're home, it can turn off the TV at night and wake you up to stereo and fresh brewed coffee in the morning. It can even turn on your air conditioner and control your heating.

SPECIAL COLOR GRAPHICS MAKE PROGRAMMING A SNAP.

You simply pick a room from the display screen. Use your keyboard or joystick to position graphics of lights or appliances. Then follow on-screen instructions to program any light or appliance to go on or off whenever you choose. You can even control thermostats, light intensity and more.



IT WON'T TIE UP YOUR COMPUTER. Use your computer only for programming. When you're finished, disconnect the interface, and use it anywhere in the house as a stand-alone controller with battery back-up. Your home will run automatically. The interface plugs into any 110V outlet, and sends digitally encoded signals through your house wiring. Installation is simple; just plug the lamp or appliance you want to control into an X-10 module. No special wiring is needed. The interface can control up to 256 modules. X-10 modules are supplied separately to work with 110V and 220V circuits.

SURPRISINGLY INEXPENSIVE. A Powerhouse system including the interface, software and connecting cables costs less than \$150. X-10 modules are less than \$20 each.

FOR THE X-10 POWERHOUSE DEALER NEAREST YOU,
CALL TOLL-FREE: **1-800 526-0027**

NEW JERSEY RESIDENTS CALL (201) 784-9700

X-10 POWERHOUSE
NUMBER ONE IN HOME CONTROL

Commodore 64 and Commodore 128 are registered trademarks of Commodore Int'l, Ltd.

FACTORY AUTHORIZED

COMMODORE REPAIR CENTER

1-800-772-7289

IN ILLINOIS (312) 879-2888

C64 Repair 39.95*
1541 Repair 79.95*
1541 Alignment
only 29.95*
Power Supplies . 32.95
C128 & other
products CALL
Commodore Parts . CALL

* Includes parts, labor & UPS shipping
both ways. Air Freight add \$10.00.

WARRANTY REPAIRS FREE**

** You pay shipping to us, we pay
shipping back.

24-48 HRS TURN AROUND

TEKTONICS PLUS, INC.

150 HOUSTON ST. — STE. 308

BATAVIA, IL 60510



CLIP AND SAVE

STOP SOFTWARE PIRACY

Using
Safeguard 64 Disks

- Renders Bit and Nibbler Copiers Ineffective
- Software is Encrypted and Protected on Each Disk
- For Commodore 64

Why should your valuable data or useful software program become available in the Public Domain?



Call or write
for more
information.

**GLENCO
ENGINEERING INC.**

3920 Ridge / Arlington Hts., IL 60004
(312) 392-2492

SOFTWARE REVIEWS

REVIEWED BY SHLOMO GINSBURG

ADA Training Course

Computer: Commodore 64

Publisher: Abacus Software

P.O. Box 7211

Grand Rapids, MI 49510

Medium: Disk

Price: \$39.95

The purpose of the *ADA Training Course* is to introduce Commodore 64 users to the fundamentals of high-level programming. Most users are already familiar with a high-level language, BASIC, but unlike BASIC which is interpreted, the majority of languages such as FORTRAN, PASCAL and ADA, are compiled. The 140-page manual accompanying the course devotes a major part to compilation. Here, the important aspects of checking syntax and semantics are outlined.

The course employs ADA as a medium for teaching, and it should be clear that this package is not designed to provide a comprehensive ADA compiler. This modern language is currently employed by users of large computers in universities and research institutes. In order to compile ADA programs on small machines such as the 64, it would be necessary to read from and write to disk many times. These operations are relatively slow, and they would make the use of the language a tedious effort.

The ADA compiler included here is a very limited version that resembles ADA in format, but does not provide the advanced features of the language. In fact, some of the most fundamental features of high-level languages are omitted altogether. Also, the description of the language in the manual is far from comprehensive. Nevertheless, the choice of ADA as a medium for the course is very good, since it accurately represents the family of modern languages.

The course disk includes an editor, compiler, assembler, disassembler and examples. ADA source programs must be written with the editor. The manual explains how to use it, but instructions are also given on the screen. As a result, it is easy to get acquainted.

A source program undergoes two

You can study aspects of programming that are difficult to cover on large mainframes.

steps of compilation: the syntactic analysis and the semantic analysis. Once the program is compiled, an assembly language program is created. In case of errors, the compiler provides information to allow the programmer to correct the mistakes. Here, the Commodore 64 user will learn about error analysis performed by compilers—that is, what the computer “expects” from a program.

The package includes an assembler to create machine language codes and a disassembler to analyze such codes. These can be used in conjunction with the ADA programs or for programs written by the user. Naturally, the manual does not cover these topics, so the user must refer to other sources.

Because the emphasis is on the operation of compilers, several aspects of programming are omitted that a beginner might need. Hopefully, these “missing links” will raise curiosity on part of the interested user, and will encourage him to further study high-level programming. Also, the package is sometimes inconsistent. For example, it is mentioned in the manual that saving a program under a name currently used by another file will cause the latter to be erased. But this is true only when the compiler is active. In the command mode, this operation results in an error. Yet, once these inconsistencies are discovered, it is easy to overcome such minor difficulties.

ADA Training Course is a hands-on introduction to modern high-level languages. It is aimed towards the Commodore 64 user who wishes to obtain some background that will aid him on large computers and in advanced applications. Both the novice and the experienced user can benefit from the course. Using the friendly environment the 64 provides, you can study aspects of programming that are most difficult to cover on large mainframe systems.

A QUICK DATA™ DRIVE IS 20 TIMES FASTER THAN AUDIO CASSETTES, LOADS FASTER THAN A COMMODORE DISK DRIVE, AND COSTS \$84.95.



Unbelievable? Believe it. The Quick Data Microwafer™ Drive is a **new drive technology** that loads a 24K program in 20 seconds vs. 8 minutes for a cassette drive or 1 minute for a Commodore Disk Drive.

Unbeatable price. One 170K drive: \$84.95. Two drive 340K system: \$154.95. Factory direct, with a full 30-day guarantee. If you're not delighted with your Quick Data Drives, return them within 30 days for a full refund. No questions asked.

Software included. All Quick Data Drives come with the QOS™ operating system, system utilities and easy-to-use instructions. Plus a blank Microwafer. You can be up and running in about five minutes.

Lots of software. Dozens of leading programs are available on Microwafers. Or, you can use Entrepo QOS to copy your existing Basic Programs to Microwafers from either cassette or diskette.

Mix-and-match. You can daisy-chain the Quick Data Drive with your existing cassette recorder by plugging it into the cassette port, or, use two QDD's linked together for dual drive capability. No problem.

Unconditional Guarantee: If you are not completely satisfied with your Quick Data Drive System, return it to Entrepo, Inc., within 30 days for a full refund. Your system is also covered by a 90 day warranty against failures or defects in manufacture.

Microwafer™ and Quick Data Drive™ are trademarks of Entrepo, Inc. Commodore® 64™ is a trademark of Commodore International, Inc.

© 1985 Entrepo, Inc.

MONEY-SAVING PACKAGES

THE MICROWAFER OFFICE: \$139.95

Includes: 170K Quick Data Drive (\$84.95); Word Manager word processor (\$34.95); Plan Manager spread sheet (\$34.95); the Speed File file manager (\$69.95). A \$189.85 value for \$139.95.

THE MICROWAFER TEACHER: \$129.95

Includes: 170K Quick Data Drive (\$84.95); General Math; Spelling; plus Typing Tutor. A \$159.80 value for \$129.95.

THE MICROWAFER ENTERTAINER: \$119.95

Includes: 170K Quick Data Drive (\$84.95); plus, three of the most popular game programs for Commodore computers. A \$174.80 value for \$119.95.

THE PHANTOM QOS PACKAGE: \$99.95

Includes: 170K Quick Data Drive (\$84.95); Phantom QOS ROM Cartridge that quickly loads and locates the operating system in ROM outside the computer's main memory (\$29.95). A \$114.90 value for \$99.95.

ORDERING DIRECT FROM ENTREPO.

Commodore® 64™ owners. Call us at the toll free number below. Give us your VISA or MasterCard Credit Card number, tell us which package you want. It will be on its way to you the following day. Simple as that. Allow \$3.00 for shipping and postage. Really fast delivery? Add \$10 for overnight package express.

TOLL FREE ORDERING: 1 (800) 231-0251

IN CALIFORNIA 1 (800) 648-4114

 **entrepo**

Sixth Sense

Computer: Commodore 64
Publisher: Microtechnic Solutions
 P.O. Box 2940
 New Haven, CT 06515
Medium: Disk
Price: \$69.95

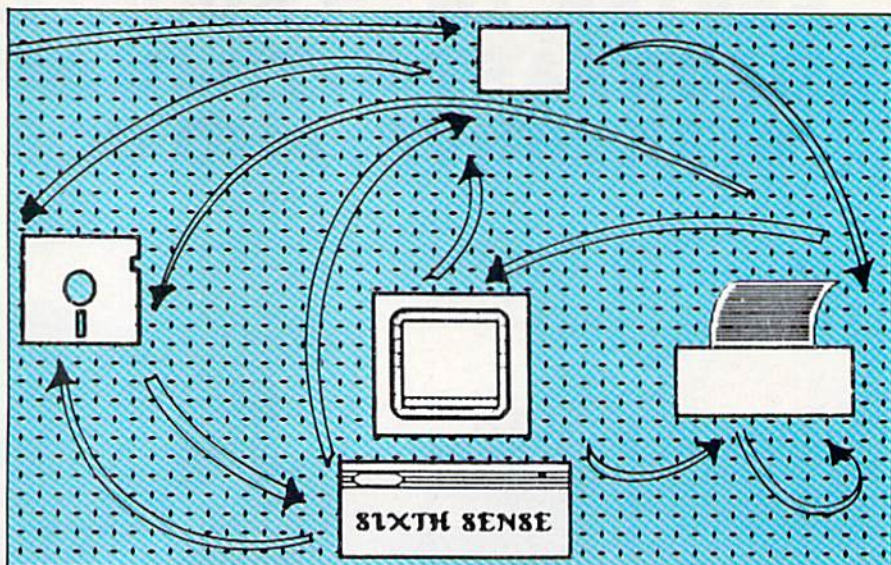
Sooner or later, most home computer enthusiasts will venture into the field of telecommunications. Some will want to communicate with other users, while others will telecommunicate to gather the wealth of information available on networks. And, of course, there are still others who may purchase modems because they've seen the movie *Wargames* and want to access NORAD. (Joe O'Hara of Microtechnic Solutions once confided in me that every time that movie plays, he sells at least a dozen extra telecommunications packages.)

With this increased interest, it is no wonder that so many software houses are developing telecommunication programs. Into this already overcrowded field, comes Microtechnic Solution's *Sixth Sense*. This fully documented and easy to use package serves up the options most commonly requested by telecommunications users, including 16 pre-programmed (or re-programmable) macros, XMODEM, "B" protocol, printer controls, translation controls, split screen, screen editor, conversions, disk utilities, help screens, and a 700-line virtual screen.

The software supports many of the most commonly owned Commodore and non-Commodore peripherals. Included in this lineup are manual, auto and smart modems, a single disk drive, a second drive, or a dual drive. It will also support an IEEE interface, and transparently connected ASCII printers. A list of makes and models is included in the front of the manual.

The 100-page manual contains a hefty (37-page) reference section, briefly describing each option and/or command, and listing the page number where it was first introduced. Directions on how to make a back-up (single or dual drive), how to change the ASCII translation tables, and a six-page glossary wind it up.

The manual assumes that the user



If you really want to get fancy, you can set up a series of commands that will log your computer on in the wee hours of the morning.

has at least a passing familiarity with the world of telecommunications. A description of features appears in the front of the manual, though you might be confused by some of the options if this is your first telecommunications program. This is not a program that you can simply boot and run. It is complex enough to require a complete walk-through prior to on-line use (I know, I tried).

I strongly suggest that the user first take the guided tour, as it will ultimately save unnecessary phone costs. Since no template is provided, this tour is not only advisable, it would be downright foolish not to take it. All of the various options can be accessed and operated while you are off-line.

Once the program has been booted, color adjustments to the monitor or T.V. can be made by using the colorful title screen as a guide. The next screen is the main menu which dis-

plays the 16 available options. The ever-present status line at the bottom of the screen displays the current line number, a 24-hour clock, counter, translation tables, disk read and write channels, and other useful information. By using the Commodore SHIFT/CONTROL and function keys, you choose where you want to go next.

The 700-line virtual screen works like a loop. All screen information is displayed, and scrolls until it reaches the first line again, where it overwrites what was previously there. The real-time clock displays military time and will keep track of your on-line time, sounding a programmable bell to remind you of your ballooning connect-time charges or phone bill. The translation tables toggle between PET and industry-standard ASCII. Disk and printer commands allow for all standard options including creating and scratching files, and buffer and screen dumps.

A fully functional screen editor is provided where messages can be written, stored, and edited. With this function, you can transfer information from screen one (the text displayed) to screen two (the editing screen), alter it, and then return to screen one. In this way, you can build up larger texts than screen two can hold, or edit large texts residing on screen one.

The macros are available while in the editor, so you can program editor functions right into the macro keys.

Continued on Pg. 132

[This isn't just hype. We really do have the money.]

WANTED:

WORLD'S GREATEST ADVENTURES.

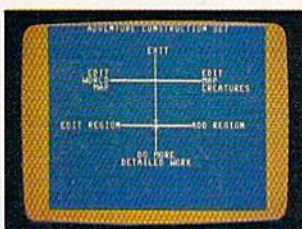
REWARD: \$1000 and FAME. CALL (800) 227-6703.



ACS is your tool kit. More than 7000 parts to build from. Power to spare!



Or make your own parts from scratch. Draw 'em. Give 'em properties. Go for it!



ACS is menu driven. It works with a positive "stick shift" controller. Easy as pie!



Ready-made segments of sci-fi, mystery & dragon-type adventures included. A real bargain!



Mountains, oceans, forests & etc. are pre-built. Or make your own landscapes. You're the boss!



Amazing fact #1: ACS makes adventures (& finishes parts of yours) by itself. This is No Lie!



Music modules & sound effects included. Score your adventures like movies. Be a maestro!



No arms control here! Endless weapons of your design. (Endless armor & cures, fortunately)



Complete, top-notch epic adventure included: *Rivers of Light* by Stuart Smith, author of *Ali Baba!*



500 obnoxious creatures thrown in! Or make your own. Point 'em at the population! See their priorities!



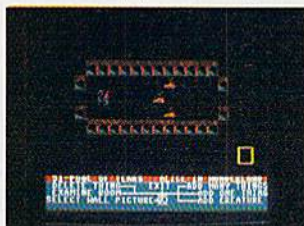
You get magic! 31 variations on 15 Big Spells! You get technology. You get religion. All right!



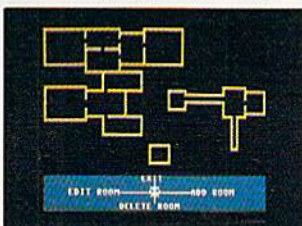
Amazing fact #2: ACS integrates text and graphics. All other products wimp out in this regard.



Characters? How many you want? Make 'em. Break 'em. Cast them into the world without a dime!



7 tutorial mini-adventures included! Generously survivable for those tentative first timers!



Design up to 15 different regions with 16 different rooms in each one. Space out!



When you've made a zippo-zocko GREAT ADVENTURE, send it here. You could win 1,000 smackers!

ADVENTURE CONSTRUCTION SET™

from ELECTRONIC ARTS™



HOW TO WIN: Send your adventure entries to Electronic Arts by 12/30/85. 3 winners will be selected by our judges. Their decision: final. Your adventure becomes "public domain" which means you can still get famous even if you don't get rich. **HOW TO ORDER:** Visit your retailer or call 800-227-6703 for direct VISA or MasterCard orders (in CA call 800-632-7979). To buy by mail, send check or money order to Electronic Arts, P.O. Box 306, Half Moon Bay, CA 94019. Add \$3 to cover insured shipping and handling. Indicate desired machine version. Allow 1-4 weeks for delivery. All EA products purchased direct have a 14 day "satisfaction or your money back" guarantee. **PRICE & MACHINE AVAILABILITY:** C-64 \$39.95. Apple IIe/c \$49.95. Coming soon to IBM PC/PCjr \$49.95. To receive our complete product catalog and direct order form, send 50¢ and a self-addressed, stamped envelope to Electronic Arts, Catalogue Offer, 2755 Campus Drive, San Mateo, CA 94403.

Commodore 128 Sprites and Sprite Utilities

The Commodore 128 has some wonderful commands for creating and manipulating sprites. The 404-page system guide, which comes packed with every 128, is the best Commodore manual yet, and it does an excellent job of explaining the new commands.

But the sprite commands don't do *everything*, and the system guide is an imposing book. This article will help you by guiding you through the manual and by providing some simple utility programs for building your library of sprites. If you follow our examples and do the reading we suggest, you will definitely learn about sprites. If you type in our utilities, you'll definitely find them useful.

If you haven't heard of sprites, they're little graphic objects, designed by you, the programmer, which move around the screen. They can look like angels or aliens, or anything, and they can move in any manner your imagination will allow. Programming sprites is one of the most rewarding computer activities, and with the 128, it's also one of the easiest. Let's start the fun by starting at the beginning.

Sprites in Memory

To understand sprites, it's helpful to know how they're stored in memory. If you're relatively new to computing, such a subject may seem bewildering, and you may wonder whether you can understand it. If that's the case with you, read this section anyway—it's simple and straightforward, and if some of it sticks in your mind, your effort will be very worthwhile.



In the 128, the memory locations from 3584 to 4095 are reserved for sprites. The computer can handle eight sprites at once, so one-eighth of that block is set aside for each sprite, as shown in Table 1. The block is 512 locations long, with each of the eight sprites using 64 locations. These 512 locations hold only the shapes of the sprites; other attributes, such as color, are separately controlled by BASIC's SPRITE statement.

Table 1. Memory Locations for Commodore 128 Sprites

	Decimal	Hexidecimal
Sprite 1	3584-3647	\$0E00-\$0E3F
Sprite 2	3648-3711	\$0E40-\$0E7F
Sprite 3	3712-3775	\$0E80-\$0EBF
Sprite 4	3776-3839	\$0EC0-\$0EFF
Sprite 5	3840-3903	\$0F00-\$0F3F
Sprite 6	3904-3967	\$0F40-\$0F7F
Sprite 7	3968-4031	\$0F80-\$0FBF
Sprite 8	4032-4095	\$0FC0-\$0FFF

Computer Wizard regularly presents elementary topics of interest to Commodore computerists. It emphasizes the needs of beginners, but is of use to advanced computerists as well. The column is written to be easily understood by all, and to be of lasting value to its readers. If you have comments or suggestions for Computer Wizard, please write to Louis F. Sander, in care of this magazine.

Regardless of what is in the sprite memory area, the 128 treats it as a sprite. Only the user knows whether a given sprite is meaningful or not. To see what's in your sprite area at power up, turn your computer on and execute this:

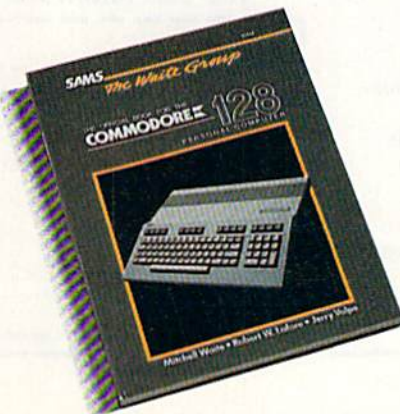


New 128 news

If you've ordered the new Commodore 128™ or you're thinking about it, Sams has news for you! A new book: The first and only official guide to Commodore's exciting new business computer.

Now you can read all about the Commodore 128 and its three different operating modes—64™, 128, and CP/M®. You'll learn how to use spreadsheets, and word processing, choose peripherals, create graphics and animation, run CP/M programs, and more.

Best of all, you'll learn how the 128 can work for you at the office or at home. So whether you've already ordered the 128 or are getting ready to, you'll find Sams Official Guide a wise investment.



Get the book that's making headlines. Get Sams Official Commodore 128 book. Visit your local Sams dealer. Or call our toll-free number and ask for Operator 205.

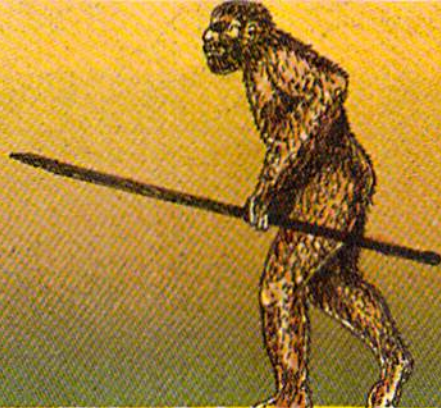
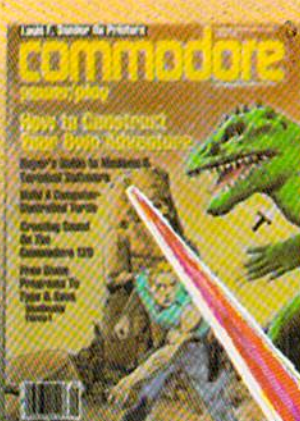
The Official Book for the Commodore 128 Personal Computer, No. 22456, \$12.95.

800-428-SAMS

In Indiana, call 317-298-5566

SAMS

Howard W. Sams & Co., Inc.
4300 West 62nd Street
Indianapolis, IN 46268



is

THE MISSING LINK!

From magazine...to diskette...to disk drive

Without LOADSTAR you are probably not getting the full benefit from the magazine that you are reading at this moment. Tell the truth now.... Have you typed in all the program listings? Of course not. Your time is worth much more than that. On the other hand, it is a shame to miss out on all the rich treasures that are available to you. The solution is LOADSTAR....

LOADSTAR is published monthly on a double-sided diskette. It contains the programs from Commodore's own magazines with lots more.... There are bonus programs, tutorials, articles, subscriber feedback, reviews, and music.

FOR



CALL TOLL-FREE 1 (800) 831-2694

8-5 CENTRAL TIME

In Louisiana call (318) 868-7247

"If you can afford only one disk service, make it Loadstar. If you can afford more than one, make sure Loadstar is one of them. You'll soon wonder why you bothered with the others!"

Stephen S. Leven, Sept./Oct. Commodore Microcomputers,
page 32

to order by mail
send to:

LOADSTAR
P.O. Box 30007
Shreveport, LA
71130-0007

- ☐ \$9.95 for the current LOADSTAR disk companion to Power Play
☐ \$9.95 for the current LOADSTAR disk companion to Commodore
Microcomputers

OR

- ☐ \$39.95 for the next 6 issues of LOADSTAR.
☐ \$69.95 for the next 12 issues of LOADSTAR.

Name _____
Address _____
City/State _____ Zip _____
Visa/MC# _____ exp. dt. _____

These rates also apply to Canada and Mexico

Write for overseas rates


```
FOR J = 1 TO 8 : SPRITE J, 1, 2 :  
MOVSPR J, 35 * J, 200 : NEXT
```

You've just made all eight sprites visible, colored them white, and positioned them in a row across the bottom of your screen. Their shapes are determined by whatever happened to be in the sprite memory area at power up. Because of the 128's orderly power-up routines, chances are good that some of the sprites are squares, and that some consist of a few or no pixels. You can turn them all into squares by executing:

```
FOR J = 3584 TO 4095 : POKE  
J, 255 : NEXT
```

With the 128, it's easy to save your sprite area to disk, and to reload it again when you want certain sprites in memory. The keys to it all are the BSAVE and BLOAD commands, which are the 128's tools for saving blocks of memory. Since you now have some nice square sprites in memory, let's save them out to disk. Just execute:

```
BSAVE "SQUARES.SPR", B0, P3584  
TO P4096
```

Be sure to type it as shown here; one of the examples in your system guide contains an error. We've adopted the .SPR convention for naming sprite files, since it identifies them in the directory. This identification is important, because sprite files must be BLOADED. DLOADing them causes crashes and other errors.

When you get the READY prompt, execute this line, which will change the appearance of your sprites by putting a three into every location of sprite memory:

```
FOR J = 3584 TO 4095 : POKE J, 3 :  
NEXT
```

Now execute the following lines,

It's much easier to create sprites with the 128 than it was with the 64.

and observe what happens as SQUARES.SPR is loaded into the sprite memory area:

```
BLOAD "SQUARES.SPR"
```

By the way, by choosing the proper parameters, you can use BSAVE to save something less than all eight sprites. With SQUARES.SPR in memory, try saving sprite four only, using:

```
BSAVE "SPRITE 4", B0, P3776 TO  
P3839
```

If you repeat the routine for changing the contents of sprite memory, then BLOAD "SPRITE 4", you'll see that this is true.

Controlling the Sprites

A word is in order about making sprites visible and moving them around. The SPRITE statement is used for the former, while the MOVSPR statement does the latter. Both are explained in section 17 of your system guide. The MOVSPR statement is somewhat complex, and we'll save it for another day. You can learn about SPRITE right now. As we give our examples, please follow along by making the suggested entries.

Assuming that sprite four is still visible on your screen, you can make it invisible by executing:

```
SPRITE 4, 0
```

You can make *all* sprites invisible

by using STOP/RESTORE. Then you can use the SPRITE statement to bring them back to life, by entering something like:

```
SPRITE 4, 1
```

Observe that sprite four is visible again. You can change its color by entering:

```
SPRITE 4, 1, X
```

where X is a number from 1 to 16, corresponding to the color you want your sprite to be. The four, of course, specifies the sprite we are controlling, while the one and zero turn it on or off. You should study page 294 of your system guide, and experiment with the x-exp and y-exp parameters of the SPRITE command. At this point, the priority and mode parameters may not seem to do much, but you can rest assured that they are useful.

Designing and Creating Sprites

To design your own sprite, you must decide how you want it to look, then make the appropriate entries into sprite memory. With the Commodore 64, this was not particularly easy, and required numerous pokes and/or the use of a separate sprite editor program. With the 128, it's much simpler, and you have three options:

1. Use SPRDEF, the built-in sprite editor program.
2. Use the 128's high-resolution graphics commands to create a design on the screen, then use the SSHAPE and SPRSAV commands to turn it into a sprite.
3. Use the tried and true methods that worked with the 64.

SPRDEF is described in detail in your system guide, on pages 116-119 and page 293. If you read that material closely, and experiment on your own, you'll soon know how to use SPRDEF. While you are experimenting, keep in mind that when SPRDEF talks about "saving" sprites, it means saving them to the sprite memory area, not to the disk. If you're tempted to experiment with multicolor sprites, you should first read our material on that subject, appearing later in this article.

The system guide's pages 109-116 give examples of using SSHAPE and SPRSAV, both of which are also ex-

Table 2. Sprite-Related Keywords

BUMP	Returns sprite collision information
COLLISION	Defines handling for sprite collision interrupt
MOVSPR	Moves or locates sprites, using one of four methods
RSPCOLOR	Returns last sprite multicolor value
RSPPOS	Returns speed and position of sprite
RSPRITE	Returns sprite attributes
SPRCOLOR	Sets Multicolors 1 and 2 for all sprites
SPRDEF	Creates sprites on the screen, using a built-in editor
SPRITE	Controls all sprite attributes—color, size, priority, color mode
SPRSAV	With SSHAPE, puts a high-resolution graphics creation into a sprite
SSHAPE	Saves a high-resolution graphics creation, so SPRSAV can put it into a sprite

plained in section 17. If you read the manual and type in the sample program, you'll get a feel for their use, plus a beginning look at MOVSPR. As you work on this program, you may make a typing error that causes it to hang up in graphics mode. If that happens, hitting STOP/RESTORE will return you immediately to text mode. You could also use a TRAP statement to put you there automatically. There's a minor bug in the sample program, since when it ends, the sprites keep moving, even after you hit STOP/RESTORE. That situation can confuse other sprite programs. You can improve the program by adding these lines:

```
6 COLOR 1,8:TRAP 99
96 MOVSPR 1,0#0:SPRITE 1,0
97 MOVSPR 2,0#0:SPRITE 2,0
```

The 64's method of sprite creation can best be understood by studying the *Commodore 64 Programmer's Reference Guide*, plus the numerous articles that have appeared in magazines. It is useful to know the method,

but you can enjoy your sprites on the 128 without it.

We're going to assume that, with your excellent reading skills and powerful creative instincts, you'll quickly teach yourself the art of making sprites on the Commodore 128. Now we can concentrate on tools.

Our first tool is the SPRITESEER program, which displays stationary sprites on the screen and lets you manipulate their attributes. It puts all eight sprites at the bottom of the screen, symmetrically aligned with the screen positions of printed characters. SPRITESEER gives each sprite the color corresponding to its number; if you want them all to be colored the same, change the SPRITE statement's third argument to the number of that color. To expand the sprites in the X and Y directions, set E=1. To make them multicolor, make M=1. When you run the program, it lists the important attribute-controlling line at the top of the screen, and prints the word RUN immediately below it. That

way, you can easily change the line and run the program again.

The second tool is NUMBERS.BAS, which makes and BSAVES some interesting sprites. BSAVED as NUMBERS.SPR, they are similar to SQUARES.SPR, but each is labeled with its own number, making it easy to identify on the screen. When you begin moving sprites around, you can use these sprites for testing purposes, and they'll be worth their weight in gold. Just BLOAD them in place of your regular sprites.

Your third tool is SPRITESAVER, which automates the BSAVE procedure for sprites. It lets you BSAVE all the sprites, one sprite, or a selected group. SPRITESAVER will be particularly useful in combining sprites from several BSAVED files. Load the files of interest, use SPRITESAVER to BSAVE the individual sprites you want, then clear memory and BLOAD them individually until you have your desired selection of sprites. (To change the number of a sprite, use SPRDEF's "C"

SPRITESEER

```
110 E=0:M=1:SPRCOLOR 11,16
120 FOR K=1 TO 8:SPRITE K,1,K,1,E,E,M
:MOVSPR K,72*K+288*(K>4)-20,
133-(56*(K>4)):NEXT K
130 PRINT CHR$(147);:LIST-110
:PRINT CHR$(145)"RUN" END
```

NUMBERS.BAS

```
110 GRAPHIC 2,1:REM TO GRAPHIC MODE
120 BOX 1,5,6,18,16:REM DRAW INNER BOX
130 BOX 1,0,1,23,21:REM DRAW OUTER BOX
140 PAINT 1,1,2:REM FILL IN BETWEEN
150 FOR S=1 TO 8
160 SS=RIGHT$(STR$(S),1):REM NUMBER
170 CHAR 1,1,1,SS:REM PRINT THE NUMBER
180 SSHAPE AS,0,1,23,21
:REM SHAPE TO AS
190 SPRSAV AS,S:REM AS TO SPRITE #S
200 NEXT
210 GRAPHIC 0:REM BACK TO TEXT MODE
220 REM SAVE ALL SPRITES TO DISK
230 BSAVE"NUMBERS.SPR",B0,
P3584 TO P4096
240 PRINT DS$:REM ERROR OR OK END
```

SPRITESAVER

```
110 PRINT"[CLEAR,DOWN14,SPACE5]
THIS SAVES A RANGE OF SPRITES[DOWN]"
120 INPUT"FIRST SPRITE TO SAVE (1-8)";F
130 PRINT
```

```
140 INPUT"LAST SPRITE TO SAVE (1-8)";L
150 PRINT TAB(17)"[DOWN2,CMDR T16,UP2]"
160 INPUT"FILENAME TO USE";FS
170 IF LEN(FS)>16 THEN 150
180 FL=3584+64*(F-1):LL=3584+64*L
190 QS=CHR$(34):PRINT"[HOME,DOWN3]
BSAVE";QSFSQS;","B0,P";FL;"TOP";LL
200 PRINT"[DOWN3]PRINTDS$[HOME]"
210 POKE 842,13:POKE 843,13:POKE 208,2
:END END
```

HBARMULTI.BAS

```
110 FOR K=3584 TO 4032 STEP 64
120 FOR L=00 TO 20:POKE K+L,085:NEXT
130 FOR L=21 TO 41:POKE K+L,170:NEXT
140 FOR L=42 TO 62:POKE K+L,255:NEXT
150 NEXT K
160 REM SAVE ALL SPRITES TO DISK
170 BSAVE"HBARMULTI.SPR",B0,
P3584 TO P4096
180 PRINT DS$:REM ERROR OR OK END
```

VBARMULTI.BAS

```
110 FOR K=3584 TO 4032 STEP 64
120 FOR L=0 TO 63 STEP 3
130 POKE K+L+0,85
140 POKE K+L+1,170
150 POKE K+L+2,255
160 NEXT L:NEXT K
170 REM SAVE ALL SPRITES TO DISK
180 BSAVE"VBARMULTI.SPR",B0,
P3584 TO P4096
190 PRINT DS$:REM ERROR OR OK END
```


COMPUTER WIZARD

command to copy it to the desired position.) When everything is as you want it, use SPRITSAVER to BSAVE all sprites.

Multicolor Sprites

Some of our tools apply to multicolor sprites, which deserve some explanation. The final argument in the SPRITE statement can put the sprite into multicolor mode. Although any sprite can be displayed in this mode, only those especially created as multicolor sprites are likely to be presentable. A multicolor sprite can contain up to three different colors. The first of these is set by the SPRITE statement in the usual way. The other two, referred to as Multicolor 1 and Multicolor 2, are set by the SPRCOLOR statement. (Their default values are white and red, respectively.)

When using SPRDEF, pressing the "M" key initiates multicolor mode. The design cursor becomes two pixels wide, number keys one through four become active in assigning colors, and each keypress fills two pixels. Here are the actions of the number keys:

The 1 key selects the background color (blank)

The 2 key selects Multicolor 1

The 3 key selects the color from the SPRITE statement

The 4 key selects Multicolor 2

The system guide has a misprint about these colors. If you follow our table, you won't go wrong.

Now to our multicolor tools. HBARMULTI.BAS creates and saves sprites which, in multicolor mode, appear as flags with horizontal bars in three colors—sprite color, Multicolor 1, and Multicolor 2. VBARMULTI.BAS produces similar sprites, but with vertical bars. In single-color mode, these sprites have quite a different appearance. If you delve into the literature on sprites, you will come to understand the reason.

Well, that's the end of our dissertation on sprites. If you've used them on the Commodore 64, you can see how far they've come. If you're a new hand at computing, we hope our discussions have been helpful. Either way, we hope you enjoy your new tools. To help you get started with Commodore 128 sprites, we've provided Table 2, a listing of every sprite-related keyword.

ATTENTION RS232 PRINTER USERS



ANNOUNCING The PRINTMASTER/S Advanced RS232 Printer Interface

Until now, very few commercial programs could be used with your RS232 Printer. Many Commodore programs on the market (such as Multiplan, Homeward, Write-Now) don't allow you to use a printer hooked up to the computer USER I/O port (RS232). Now with the release of the PRINTMASTER/S Advanced RS232 Printer Interface, your RS232 printer is compatible with all your software. The PRINTMASTER/S hooks up to the Commodore serial bus, which is the standard printer connection for all software. The PRINTMASTER/S provides full RS232 signals (pins 2 thru 8, and 20) with full plus and minus voltage levels for complete compatibility with any standard RS232 printer. Switch selectable for 300, 600, 1200, 2400 baud, parity, word, etc. DTR handshaking. The PRINTMASTER/S supports all standard Commodore printer features, including graphics characters and screen dumps on Epson, Gemini, Tally, Okidata, NEC, DEC, Prowriter, Gonilla, and more. The PRINTMASTER/S can be powered by the computer cassette port, or an external power supply. The 3 foot RS232 cable comes with your choice of male or female DB25 (please specify). Compatible with the C128 in all modes. Many additional features. Only \$119.95!

See your local dealer or
CALL (206) 236-2983

30 day money back guarantee on all products. Visa and MC welcome. Write to us if you wish to be on a special marketing survey mailing list.

DEALERS CALL US!

Omnitronix

P.O. BOX 43-DEPT.C9-MERCER IS., WA 98040

EXTEND YOUR REACH

Flexidraw, the light pen system for Commodore users who want easy Computer Aided Design with professional results. Whether drawing schematics or practicing your artistic talents, FLEXIDRAW will give you over 65 graphic features including two full screens, 16 colors, sprite animation, and a library of technical symbols. The FLEXIDRAW system: quality light pen, disk, and manual, only \$149.95.



From the makers of Penware:

Flexidraw the Graphics Integrator *Flexifont*



**Inkwell
Systems**

P.O. Box 85152 MB290
San Diego, CA 92138
(619) 268-8792

SYNTECH CORP. SEEKS DEVELOPERS

of (Midi) music software (printing, educational, sequencing, and utilities) for the IBM PC, Apple IIe/+ Commodore 64, & Macintosh compatible with the Syntech, Passport/Yamaha, & Roland MPU 401 Midi Interfaces.

Syntech Corporation

23958 CRAFTSMAN RD., CALABASAS, CA 91302

(818) 704-8509

telex 650-254-8720

Syntech, Passport, Commodore, Apple & IBM are registered trademarks of Syntech Corp. Passport Designs Inc. Yamaha Int'l Corp. Commodore Computer Inc. Apple Computer Inc. International Business Machines Inc. & Sequential Circuits Inc.

PROFESSIONAL ELECTRONIC ENGINEERING SOFTWARE

FOR COMMODORE C-64™
Practical, Powerful and Friendly

CIRCUIT ANALYSIS & MODIFICATION

- * MODES: UP TO 38. ELEMENTS: UP TO 145
- * CALCULATE & PLOT TRANSFER FUNCTIONS & NODE VOLTAGES VS. FREQUENCY
- * CIRCUIT TYPE: AC/DC/PASSIVE/ACTIVE
- * BUILT-IN MODELS FOR TRANSISTORS & OPERATIONAL AMPLIFIERS
- * INCLUDES CIRCUIT MODIFY ROUTINE
- * HARDCOPY OF PLOTS & CALCULATIONS

ACTIVE FILTERS DESIGN & ANALYSIS

- * LOWPASS/HIGHPASS/BANDPASS FILTERS
- * STANDARD 1% OR 5% TOL. COMPONENTS
- * HARDCOPY OF PLOTS & SCHEMATICS

BODE PLOTS & POLYNOMIAL ROOTS

- * ANALYZE & MODIFY TRANSFER FUNCTIONS
- * HARDCOPY OF MAG/PHASE PLOTS
- * POLYNOMIAL ROOTS UP TO 20TH ORDER

PRINT-OUTS ON 1525/MP8801/EPSON/GEMINI

S6-18/1526/OKIMATE 18/OKIDATA/SIEMENS

ALL ABOVE (ONE DISK) FOR ONLY \$39.95

Please add \$2.50 shipping (\$4.50 outside USA)

California residents add 6%.

TO ORDER, send check or money order to:

BAMTEK

1541 N. China Lake Blvd.
Suite #584

Ridgecrest, CA 93555
(619) 446-5311 ext. 584

For Additional Information Call or Write to Above

WE LOVE COMMODORE **and** *We Love Our Customers*

That's why we only sell and support C-128, Com-64 and Vic 20 computers!! We have • the best prices • over 1000 programs • 500 accessories • absolutely the best service • one day express mail delivery • immediate replacement warranty • 15 day free trial • programming knowledge • technical knowledge • we are the only one in the U.S.A. with complete support for C-128, Com-64 and Vic 20 computers!!

PROTECTO ENTERPRIZES Box 550, Barrington, IL 60010

SEND IN THIS COUPON TODAY FOR A FREE 64-PAGE
"EXCLUSIVE C-128, COM-64 AND VIC-20 CATALOG"—PLUS OUR SPECIAL
"BUY MORE—SAVE MORE COUPON"
(Save up to \$500 on software and accessories)

Name _____

Address _____

City _____ State _____ Zip Code _____

No One! But No One! Can Compare TO

PROTECTO ENTERPRIZES

TO ORDER WRITE OR CALL: PROTECTO ENTERPRIZES, BOX 550, BARRINGTON, IL 60010

Call 312/ 382-5244
8 to 5 Weekdays 9-12 Saturdays

COMMODORE 64 COMPUTER

\$139⁹⁵

- 170K Disk Drive \$139.95
- Commodore Graphics Printer \$99.95
- 14" Commodore Color Monitor \$149.95

COMPUTER AND SOFTWARE SALE

CALL
BEFORE
YOU
ORDER

PRICES
MAY
BE
LOWER

C128 COMMODORE COMPUTER



(Order Now)

CALL US!

- 340K 1571 Disk Drive
- Voice Synthesizer \$39.95
- 12" Green or Amber Monitor \$59.95
- Printer/Typewriter Combination \$249.95

SPECIAL SOFTWARE COUPON

We pack a SPECIAL SOFTWARE DISCOUNT COUPON with every COMMODORE 64 COMPUTER, DISK DRIVE, PRINTER, or MONITOR we sell! This coupon allows you to SAVE OVER \$500 OFF SALE PRICES!!

(Examples)

PROFESSIONAL SOFTWARE COMMODORE 64

Name	List	Sale	Coupon
Paperback Writer 64	\$99.00	\$39.95	\$29.95
Paperback Data Base	\$69.00	\$34.95	\$24.95
Paperback Dictionary	\$24.95	\$14.95	\$10.00
Practical II	\$69.95	\$49.95	\$44.95
Print Shop (Disk)	\$44.95	\$32.95	\$26.95
Practicalc	\$59.95	\$24.95	\$19.95
Programmers Reference Guide	\$20.95	\$16.95	\$12.50
Programmers Helper (Disk)	\$59.95	\$29.95	\$19.95
80 Column Screen (Disk)	\$59.95	\$29.95	\$19.95
Disk Filer (by Flip-N-File)	\$39.95	\$14.95	\$12.95
Deluxe Tape Cassette	\$89.00	\$44.95	\$34.95
Pro Joy Stick	\$19.95	\$12.95	\$10.00
Light Pen	\$39.95	\$14.95	\$9.95
Dust Cover	\$8.95	\$6.95	\$4.60
Simon's Basic	\$29.95	\$22.95	\$19.95
Pitstop II Epyx	\$29.95	\$22.95	\$19.95
Super Graphics Expander	\$29.95	\$22.95	\$19.95
Music Calc I	\$59.95	\$29.95	\$12.95
Filewriter	\$59.95	\$29.95	\$24.95

(See over 100 coupon items in our catalog)

Write or call for
Sample SPECIAL SOFTWARE COUPON!

C128 COMMODORE COMPUTER

We expect a limited supply for Christmas. We will ship on a first order basis. This all-new revolutionary 128K computer uses all Commodore 64 software and accessories plus all CPM programs formatted for the disk drive.

340K 1571 COMMODORE DISK DRIVE

Double Sided, Single Disk Drive for C-128 allows you to use C-128 mode plus CPM mode. 17 times faster than 1541, plus runs all 1541 formats.

SUPER AUTO DIAL MODEM \$39.95

Easy to use. Just plug into your Commodore 64 computer and you're ready to transmit and receive messages. Easier to use than dialing your telephone. Just push one key on your computer! Includes exclusive easy to use program for up and down loading to printer and disk drives. **Best in U.S.A.** List \$129.00. **SALE \$39.95.**

VOICE SYNTHESIZER \$39.95

For Commodore 64 computers. Just plug it in and you can program words and sentences, adjust volume and pitch, make talking adventure games, sound action games and customized talkies!! FOR ONLY \$19.95 you can add TEXT TO SPEECH, just type a word and hear your computer talk — ADD SOUND TO "ZORK", SCOTT ADAMS AND OTHER ADVENTURE GAMES!! (Disk or tape.) List \$89.00. **SALE \$39.95**

12" GREEN OR AMBER MONITOR \$59.95

Your choice of green or amber screen monitor, top quality, 80 columns x 24 lines, easy to read, anti-glare! PLUS \$9.95 for connecting cable. Com-64 or VIC-20. List \$159.00. **SALE \$59.95.**

PRINTER/TYPEWRITER COMBINATION \$249.95

"JUKI" Superb letter quality, daisy wheel printer typewriter combination. Two machines in one — just a flick of the switch. 12" extra large carriage, typewriter keyboard, automatic margin control and relocate key, drop in cassette ribbon! (90 day warranty) centronics parallel or RS232 serial port built in (Specify). List \$349.00. **SALE \$249.95.** (Ltd. Qty.)

13" RGB & COMPOSITE COLOR MONITOR \$259.95

Must be used to get 80 columns in color with 80 column computers (C128 - Atari ST - IBM - Apple). (Add \$14.50 shipping) List \$399.00. **SALE \$259.95.**

COMMODORE 64 COMPUTER \$139.95

You pay only \$129.95 when you order the powerful 84K COMMODORE 64 COMPUTER! LESS the value of the SPECIAL SOFTWARE DISCOUNT COUPON we pack with your computer that allows you to SAVE OVER \$500 off software sale prices!! With only \$100 of savings applied, your net computer cost is \$39.95!!

170K DISK DRIVE \$139.95

You pay only \$139.95 when you order the 170K Disk Drive! LESS the value of the SPECIAL SOFTWARE DISCOUNT COUPON we pack with your disk drive that allows you to SAVE OVER \$500 off software sale prices!! With only \$100 of savings applied, your net disk drive cost is \$39.95.

14" COMMODORE COLOR MONITOR \$149.95

You pay only \$149.95 when you order this 14" COLOR MONITOR with sharper and clearer resolution than any other color monitors we have tested! LESS value of the SPECIAL SOFTWARE DISCOUNT COUPON we pack with your monitor that allows you to save over \$500 off software sale prices!! With only \$100 of savings applied, your net color monitor cost is only \$49.95. (16 Colors).

80 COLUMN

COMMODORE GRAPHICS PRINTER \$99.95

You pay only \$99.95 when you order the 803 Commodore Graphics Printer, 60 CPS, Dot Matrix, Bi-Directional, Prints 8 1/2" full size paper. Plug in direct interface included! LESS the value of the SPECIAL SOFTWARE DISCOUNT COUPON we pack with your printer that allows you to SAVE OVER \$500 off software sale prices!! With only \$100 of savings applied your net printer cost is ZERO!

80 COLUMN BOARD \$59.95

Now you program 80 COLUMNS on the screen at one time! Converts your Commodore 64 to 80 COLUMNS when you plug in the 80 COLUMN EXPANSION BOARD!! PLUS 4 slot expander!

80 COLUMNS IN COLOR

PAPERBACK WRITER 64 WORD PROCESSOR \$39.95

This PAPERBACK WRITER 64 WORD PROCESSOR is the finest available for the COMMODORE 64 computer! The ULTIMATE FOR PROFESSIONAL Word Processing, DISPLAYS 40 or 80 COLUMNS IN COLOR or black and white! Simple to operate, powerful text editing, complete cursor and insert delete key controls line and paragraph insertion, automatic deletion, centering, margin settings and output to all printers! List \$99.00. **SALE \$39.95.** Coupon \$29.95.

ATTENTION Computer Clubs We Offer Big Volume Discounts CALL TODAY!

PROTECTO WARRANTY

All Protecto's products carry a minimum 90 day warranty. If anything fails within 90 days from the date of purchase, simply send your product to us via United Parcel Service prepaid. We will IMMEDIATELY send you a replacement at no charge via United Parcel Service prepaid. This warranty proves once again that **We Love Our Customers.**

- LOWEST PRICES • 15 DAY FREE TRIAL
- BEST SERVICE IN U.S.A. • ONE DAY EXPRESS MAIL

PHONE ORDERS

8 a.m. - 8 p.m. Weekdays
9 a.m. - 12 noon Saturdays

- 90 DAY FREE REPLACEMENT WARRANTY
- OVER 500 PROGRAMS • FREE CATALOGS

* Add \$10.00 for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$20.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES, EXCEPT CANADA.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail!

VISA — MASTER CARD — C.O.D.

No C.O.D. to Canada, APO-FPO.

PROTECTO

We Love Our Customers

22292 N. Pepper Rd., Barrington, Illinois 60010

312/382-5244 to order

Commodore 64

MODEM

Commodore 64



List \$99.00

Sale
\$39⁹⁵



List \$99.00

Sale
\$39⁹⁵

Lowest Price In the U.S.A.

FOR CHILDREN · ADULTS · BUSINESS

Complete Auto Dial Telecommunications Package

"The only telecommunications package you will ever need."

(Exclusive Easy To Use Features)



Total **Telecommunications**



- 300 Baud Modem • Auto Dial • Auto Answer • Upload & Download
- 52 Database Services (UPI News, etc.) Phone Numbers Included

Reach Out and Access Someone

- Educational courses
- Financial Information
- Banking at Home
- Popular Games
- News Updates and Information
- Electronic Shopping
- Research and Reference Materials

The Total Telecommunications Package offers you all this plus ...

- Auto Log-on
- Dialing from Keyboard
- On-line Clock
- Capture and Display High Resolution Characters
- Download Text, Program or Data Files
- Stores on Disk Downloaded Files
- Reads Files from Disk and Uploads Text or Program Files
- Select Any Protocol (access almost any computer or modem)
- Plus Much, Much More

List \$99.00

Sale \$39⁹⁵

We are so sure this is the only telecommunications package you will need we will give you 15 days Free Trial.

Add \$3.00 for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$6.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES, EXCEPT CANADA.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail!

VISA — MASTER CARD — C.O.D.

No C.O.D. to Canada, APO-FPO.

PROTECTO

We Love Our Customers

22292 N. Pepper Rd., Barrington, Illinois 60010

312/382-5244 to order

GIANT PRINTER SALE!!

List \$399.00

10" Printer

S A L E \$179⁰⁰

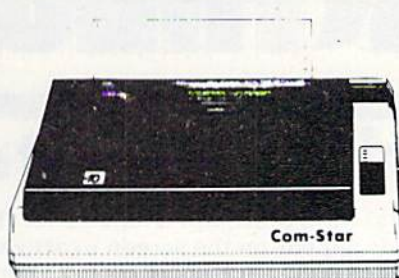
10" Comstar 10X — This Bi-directional Tractor/Friction Printer prints standard sheet 8½"x11" paper and continuous forms or labels. High resolution bit image graphics, underlining, horizontal tab setting, true lower descenders, with super scripts and subscripts, prints standard pica, compressed, expanded, block graphics, etc. Fantastic value. (Centronics parallel interface.)

List \$399.00. Sale \$179.00.

1 Year Warranty

120-140 CPS

Premium Quality



List \$599.00

15½" Printer

S A L E \$249⁰⁰

15½" Comstar 15X — Has all the features of the 10" Comstar 10X plus a wider 15½" carriage and more powerful electronics to handle large ledger business forms! (Better than FX-100). The 15½" Comstar 15X also prints on standard size paper and continuous forms and labels. Fantastic value. (Centronics parallel interface.)

List \$599.00. Sale \$249.00.

List \$499.00

10" Printer

S A L E \$229⁰⁰

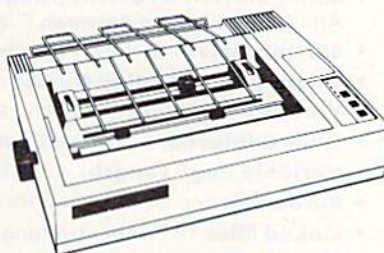
10" Comstar 160+ High Speed — This Bi-directional Tractor/Friction Printer combines the above features of the 10" Comstar 10X with speed (150-170 cps) and durability. Plus you get a 2K buffer, 96 user definable characters, super density bit image graphics, and square print pins for clearer, more legible print (near letter quality). This is the best value for a rugged dependable printer. (Centronics parallel interface.)

List \$499.00. Sale \$229.00.

1 Year Warranty

150-170 CPS

High Speed



List \$699.00

15½" Printer

S A L E \$299⁰⁰

15½" Comstar 160+ High Speed — This Bi-directional Tractor/Friction Printer has all the features of the 10" Comstar 160+ High Speed plus a wider 15½" carriage and the heavy duty electronics required for today's business loads. You can use large ledger business forms as well as standard sheets and continuous forms and labels. This is the best wide carriage printer in the U.S.A. (Centronics parallel interface.)

List \$699.00. Sale \$299.00.

List \$599.00

10" Printer

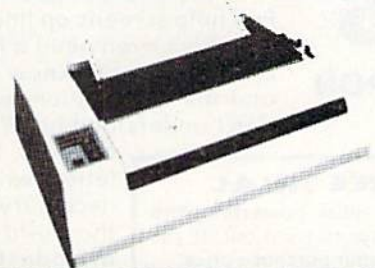
S A L E \$259⁰⁰

10" Comstar 2000 — The ultimate printer has arrived! This Bi-directional Tractor/Friction Printer gives you all the features of the Comstar 160 plus higher speed (165-185 cps), 256 downloadable characters, proportional setting, external dark printing mode and a *lifetime printhead warranty. PLUS ...

Lifetime warranty*

165-185 CPS

High Speed & Letter Quality



List \$599.00

10" Printer

S A L E \$259⁰⁰

With the flip of a switch you can go into the letter quality mode which makes all your printing look like it came off a typewriter. Turn in term papers, do articles or just print programs. Have the best of letter quality and speed in one package. Fantastic printer (Centronics parallel interface.)

List \$599.00. Sale \$259.00.

• 15 Day Free Trial — 1 Year Immediate Replacement Warranty Parallel Interfaces

Commodore-64, VIC 20 — \$39.00

Atari — \$59.00

Apple II, II+, IIe — \$59.00

Add \$10.00 (\$14.50 for 15½" Printers) for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$20.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES, EXCEPT CANADA.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery. 2 to 7 days for phone orders. 1 day express mail!

VISA — MASTER CARD — C.O.D. No C.O.D. to Canada, APO-FPO.

PROTECTO

We Love Our Customers

22292 N. Pepper Rd., Barrington, Illinois 60010

312/382-5244 to order

☆☆ NEW ☆☆

Commodore - 64

☆☆ NEW ☆☆

WORD PROCESSING BREAKTHROUGH!

40 or 80 Columns
in Color

Paperback Writer 64

40 or 80 Columns
in Color

This is the easiest to use and most powerful word processor available for the Commodore 64. As you type on the screen, you will see your letters and words appear on the screen exactly as they will be printed (i.e. *Italics* will be *Italic*, **Bold Face** will be **Bold Face**). With the printer files you can customize Paperback Writer 64 to use all the fancy features of your printer. Loads EZ Script®, Paperclip®, & Wordpro 64® Files so you can easily upgrade your past wordprocessing text that you've written with obsolete wordprocessors.

Take a look at some of the other features:



- **Wordwrap** — No Words Break At The Edge Of The Screen.
- **Flexible Cursor Movement**, Including Tabs And Other Timesavers.
- **Deletion And Insertion** Of Characters, Lines And Blocks Of Text.
- **On-screen Text Enhancement**, Such As Bold Face, Italics, Underlining, Superscripts And Subscripts, And Foreign And Other Characters.
- **Manipulation Of Blocks (ranges)** Of Text For Functions Such As Moving And Deleting, Even Between Files.
- **Sorting Lists** In Order Of Numbers And Letters.
- **Aligning And Adding Numbers** In Columns, Helpful With Tables.
- **Variable Margins** At Left And Right, And Paragraph Indentation.
- **Lines Centered, Justified Or Aligned** At The Right Side.
- **Variable Page Lengths And Line Spacing.**
- **Borders** At Top Or Bottom With Optional Title Lines And Page Numbers.
- **Linked Files** To Print Extra-long Documents In Sequence.
- **Flexible Printer Set-up** To Allow Use With Any Printer.
- **Find And Replace** Text Functions That Can Be Automatic.
- Complete Or Selective **Directories** Of Files On The Disk.
- **Sequential Files** For Mail Lists And Communication With Other Computers.
- **Spelling Checker**, Checks Your Spelling.

INTRODUCTORY PRICE

\$29.95

COUPON

Sale Price \$39.95

DOUBLE PROTECTO FREE TRIAL

We are so sure this is the easiest and most powerful word processor available, we will give you 30 days to try it out. If you are not completely satisfied, we will refund your purchase price.

☆☆☆☆ Plus ☆☆☆

Full help screens on line with additional help on the disks mean you don't even need a manual. If you're in the middle of a page and you want to know how to use a special function just hit F7 and the information will appear before your eyes. If you still don't understand hit F7 again and a more detailed explanation appears. Then simply hit F8 and you're back in the letter where you left off. No manual lookup necessary. This is the easiest word processor in the world to use. List \$99.00.

Introductory Sale Price \$39.95. Coupon \$29.95.

PAPERBACK DATABASE (Datafax) List \$69.00. Sale \$34.95. * Coupon \$24.95.

Add \$3.00 for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$6.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail!

VISA — MASTER CARD — C.O.D.

No C.O.D. to Canada, APO-FPO.

PROTECTO

We Love Our Customers

22292 N. Pepper Rd., Barrington, Illinois 60010

312/382-5244 to order

EZ Script® is a trademark of Commodore Business Machines. Paperclip® is a trademark of Batteries Included, Inc. & Wordpro 64® is a trademark of Professional Software, Inc.

COLOR MONITOR



SALE!!!



(Premium Quality)

- Built in Speaker and Audio
- Front Panel Controls
- For Video Recorders
- For Small Business Computers
- Apple - Commodore - Atari - Franklin - etc.



(Premium Quality)

- Beautiful Color Contrast
- High Resolution
- Separated Video
- Sharp Clear Text
- Anti-Glare Screen
- 40 Columns x 24 Lines
- Supports 80 Columns

List \$329⁰⁰



RGB
IBM, C-128,
Apple, Atari ST

13" Color Computer Monitor

* Connecting cable \$9.95

Sale \$159⁹⁵*

13" RGB & COMPOSITE COLOR MONITOR

Allows use of C-128 and C64 mode - composite and 80 column RGB mode. Must be used to get 80 columns in color with 80 column computers (IBM, C-128, Apple & Atari ST). (add \$14.50 shipping)

List \$399.00

Sale \$259⁹⁵*

14" COMMODORE COLOR MONITOR

(add \$14.50 shipping)

List \$299.00

Sale \$149⁹⁵*

15 Day Free Trial - 90 Day Immediate Replacement Warranty

12" XTRON SUPER HI-RESOLUTION MONITOR

80 Columns x 24 Lines, Super Hi-Resolution 800 lines Green or Amber Super-Clear "Easy to Read" text with special anti-glare screen! (Ltd. Qty.)

List \$249.00

Sale \$109⁹⁵*

12" **ZENITH** HI-RESOLUTION GREEN OR AMBER TEXT DISPLAY MONITOR

80 Columns x 24 Lines, Hi-Resolution, crisp clear easy to read text with anti-glare screen! A MUST for word processing. (Ltd. Qty.)

List \$199.00

Sale \$89⁹⁵*

12" MONITOR GREEN OR AMBER TEXT

80 Columns x 24 Lines, easy to read up front controls (Ltd. Qty.)

List \$159.00

Sale \$59⁹⁵*

* Connecting cable \$9.95

• **LOWEST PRICES** • **BEST SERVICE IN U.S.A.** • **ONE DAY EXPRESS MAIL** • **OVER 500 PROGRAMS** • **FREE CATALOGS**

Add \$10.00 for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$20.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES, EXCEPT CANADA. Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery. 2 to 7 days for phone orders. 1 day express mail!

VISA — MASTER CARD — C.O.D.

No C.O.D. to Canada, APO-FPO.

PROTECTO

We Love Our Customers

22292 N. Pepper Rd., Barrington, Illinois 60010

312/382-5244 to order

FLOPPY DISKS SALE *69¢ ea.

Economy Model or Cadillac Quality

We have the lowest prices!

*ECONOMY DISKS

Good quality 5¼" single sided single density with hub rings.

Bulk Pac	100 Qty.	69¢ ea.	Total Price	\$69.00
	10 Qty.	89¢ ea.	Total Price	8.90

CADILLAC QUALITY (double density)

- Each disk certified
- Free replacement lifetime warranty
- Automatic dust remover

For those who want cadillac quality we have the Loran Floppy Disk. Used by professionals because they can rely on Loran Disks to store important data and programs without fear of loss! Each Loran disk is 100% certified (an exclusive process) plus each disk carries an exclusive FREE REPLACEMENT LIFETIME WARRANTY. With Loran disks you can have the peace of mind without the frustration of program loss after hours spent in program development.

100% CERTIFICATION TEST

Some floppy disk manufactures only sample test on a batch basis the disks they sell, and then claim they are certified. Each Loran disk is individually checked so you will never experience data or program loss during your lifetime!

FREE REPLACEMENT LIFETIME WARRANTY

We are so sure of Loran Disks that we give you a free replacement warranty against failure to perform due to faulty materials or workmanship for as long as you own your Loran disk.

AUTOMATIC DUST REMOVER

Just like a record needle, disk drive heads must travel hundreds of miles over disk surfaces. Unlike other floppy disks the Loran smooth surface finish saves disk drive head wear during the life of the disk. (A rough surface will grind your disk drive head like sandpaper). The lint free automatic CLEANING LINER makes sure the disk-killers (dust & dirt) are being constantly cleaned while the disk is being operated. PLUS the Loran Disk has the highest probability rate of any other disk in the industry for storing and retaining data without loss for the life of the disk.

Loran is definitely the Cadillac disk in the world

Just to prove it even further, we are offering these super LOW INTRODUCTORY PRICES
List \$4.99 ea. INTRODUCTORY SALE PRICE \$2.49 ea. (Box of 10 only) Total price \$24.90
\$3.33 ea. (3 quantity) Total price \$9.99

All LORAN disks come with hub rings and sleeves in an attractive package.

DISK DRIVE CLEANER \$19.95

Everyone Needs A Disk Drive Doctor

FACTS

- 60% of all drive downtime is directly related to poorly maintained drives.
- Drives should be cleaned each week regardless of use.
- Drives are sensitive to smoke, dust and all micro particles.
- Systematic operator performed maintenance is the best way of ensuring error free use of your computer system.

The Doctor disk drive cleaner can be used with single or double sided 5¼" disk drives. The Doctor is an easy to use fast method of maintaining efficient floppy diskette drive operation. The Doctor cleaner comes with 2 disks and is packed in a protective plastic folder to prevent contamination. List \$29.95. **Sale \$19.95.** * Coupon \$14.95.

Add \$3.00 for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$6.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES, EXCEPT CANADA.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery. 2 to 7 days for phone orders. 1 day express mail!

VISA — MASTER CARD — C.O.D.

No C.O.D. to Canada, APO-FPO.

PROTECTO

We Love Our Customers

22292 N. Pepper Rd., Barrington, Illinois 60010

312/382-5244 to order

Famous Canon National Brand

10" Carriage

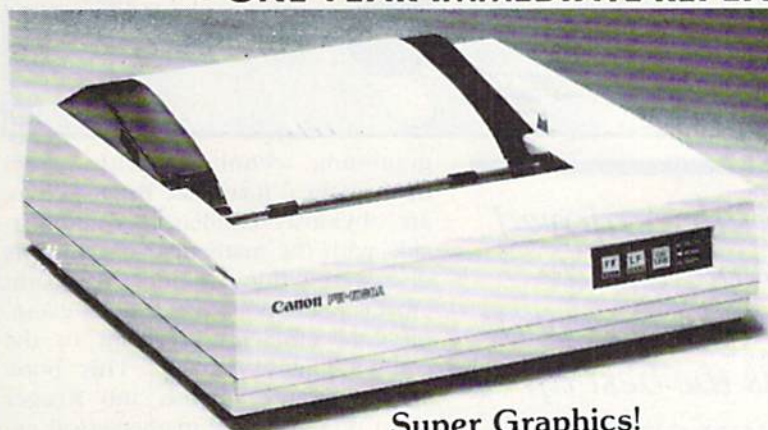
HI-SPEED

15" Carriage

PRINTER SALE

Below Wholesale Cost Prices!!!

- 160-180 CPS • High Speed Dot Matrix • Letter Quality Modes
- Tractor/Friction • 4 Character Styles • Business or Personal
- Programmable Characters • 2K Buffer • 15 Day Free Trial
- **ONE YEAR IMMEDIATE REPLACEMENT WARRANTY**



Super Graphics!

Print Sample

*** NLQ PICA PRINTING ***

CANON IMPACT MATRIX PRINTER CANO
CANON IMPACT MATR

Check these features & prices

10" Printer

List \$499.00

\$199⁰⁰

Call for Volume Discounts

15" Printer

List \$699.00

\$249⁰⁰

Call for Volume Discounts

(IBM - Commodore)

Printing Method

Impact dot matrix

Printing Speed

160 CPS at standard character printing
27 CPS at NLQ character printing

Printing Direction

Text Mode — Bi-directional
Graphic Mode — Unidirectional

Print Head Life

100 million characters

Printing Characters

Standard 11 x 9 dot matrix
NLQ 23 x 18 dot matrix
Character size: 2 x 2.42 mm (standard)
Character set: Full ASCII character set (96),
32 special European characters

SPECIFICATIONS (Apple - Atari - Etc.)

Down Loading

11 x 9 dot matrix; NLQ 23 x 18 dot matrix
optional

Print Buffer

2K-byte utility buffer

Image Printing

Image Data: Vertical 8, 9 and/or 16 dot
Resolution: Horizontal 60 dots/inch
Horizontal 120 dots/inch (double density)
Horizontal 240 dots/inch (quadruple density)

Interface

8-bit parallel interface (Centronics type)

Paper

Plain paper, Roll paper, Single sheet,
Fanfold, Multipart paper: max. 3 sheets
(original plus 2)

Ink Ribbon Cartridge

Ribbon Life: 3 million characters/cartridge

Maximum Number of Characters

Standard:	10 cpi	80 cpl
Enlarged:	5 cpi	40 cpl
Condensed:	17.1 cpi	136 cpl
Condensed enlarged:	8.5 cpi	68 cpl
Elite:	12 cpi	96 cpl
Elite enlarged:	6 cpi	48 cpl
NLQ pica:	10 cpi	80 cpl
NLQ pica enlarged:	5 cpi	40 cpl

Physical Dimensions

Size: 15 3/4" x 12 5/8" x 4 3/8" (10")
Weight: 17.6 lbs. (10")

Cartridge Ribbon.

List \$29.95. Sale \$19.95.

Interfaces

IBM \$89.00

Apple \$59.00

Atari \$59.00

Commodore \$39.00

Add \$13.50 (\$15.00 for 15" Printers) for shipping, handling and insurance. Illinois residents please add 6% tax. Add \$20.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES, EXCEPT CANADA.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery. 2 to 7 days for phone orders. 1 day express mail!

VISA — MASTER CARD — C.O.D. No C.O.D. to Canada, APO-FPO.

PROTECTO

We Love Our Customers

Box 550, Barrington, Illinois 60010

312/382-5244 to order

At Home with BASIC: Programming the Commodore 64

Authors: Henry Mullish and Dov Kruger

Publisher: Simon & Schuster
1230 Avenue of the Americas
New York, NY 10020

Price: \$12.95

Upon reading *At Home with BASIC*, I quickly realized that I was holding something valuable—a quality BASIC tutorial. What makes *At Home with BASIC* a superior product is that rare symbiotic relationship between authors Mullish and Kruger, and the fine editorial staff at Simon & Schuster. Quality is evident everywhere: a crisp graphic design; well thought-out, structured writing; literary precision and distinction; and insightfulness into new computer applications.

One of the first things you will notice about *At Home with BASIC* is its attention to detail. If a book could ever be ergonomically designed, this would be the one to serve as a blueprint. Graphically, the book is stunning, even if it is in black and white. It also lies flat for easy “hands on” usage.

At Home with BASIC is clear and comprehensive. Every chapter ends with review questions—structured questions followed immediately by detailed answers. In fact, I have found this section integral to the success of *At Home with BASIC*, because the answers summarize important chapter points and topics. Each chapter also has a “Hands-On Practice Section,” with interesting programming challenges directly based on lessons learned in that specific chapter. A “Try Your Hand at These” section aids in the programmer’s understanding of important concepts.



I especially enjoyed the chapter on debugging, since what good is the best application or the best algorithm if your program won't run?

At Home with BASIC is important because it reveals little-known programming secrets which are often uncovered by the Commodore 64 programmer only after months of painful experimentation. These secrets vary in their value to apprentice programmers, depending upon their prior experience. Thus, some tricks that may seem trite to some, will no doubt be revolutionary to others.

Mullish and Kruger have successfully shown new programmers that a number, whether constant or variable, can be expressed graphically (displayed), as well as processed internally in order to extrapolate a new generation of numbers. In other words, the original number can be stored, displayed, or changed. This concept is developed further when Mullish and Kruger discuss the LET as an assignment (i.e., $LET\ X = X + 1$) rather than that of an algebraic expression/equation (i.e., $X <> X + 1$).

The authors often illustrate pro-

gramming techniques with actual mathematical formulas. Because they are obviously familiar and comfortable with the mathematical concepts discussed within this book, the mathematical situations they use as examples are eminently relevant to the computer environment. This book works because Mullish and Kruger don't pretend to be mathematical experts, they *are* mathematical experts. They use computers to solve problems which are important to them, ones they must deal with daily. To Mullish and Kruger, BASIC can be useful as a mathematical tool, a viable substitute for FORTRAN.

This book is intense—more of a freshman college text than the typical “learn-BASIC-in-40-minutes” manual now available. I would not recommend this book to the absolute beginner or non-mathematical person. I would recommend *At Home with BASIC* to an intermediate student.

All examples are clearly illustrated and spotlight programming at its best. I especially enjoyed the chapter on debugging, since I feel that this is a subject that is sorely missing from books of this nature. What good is the best application or the best algorithm if your program won't run? Mullish and Kruger show practical solutions to clear programming logjams fast.

Everything about *At Home with BASIC* is first-class: good design, excellent writing, and clear programming examples. Best of all, you get this masterpiece at a price that anyone can afford. I recommend *At Home with BASIC* without hesitation. C

**HIGH
QUALITY
LOW PRICE**

COMMODORE 64[®] SOFTWARE

The GOLD DISK

VOLUME 1 FEATURES:

- **Complete Data Base system** with:
 - Full screen data entry
 - Fast sorting capabilities
 - Extensive multi-clause search facilities
 - On line help facilities
 - On disk tutorial and instructions
- **2 arcade style games** with 3D graphics
- **Learning to Program in BASIC:** Lesson 1 Input/output, variables and assignments, conditional branches.
- **Towers of Hanoi** with solution
- **The Personal House Purchase Analyzer:** Evaluation of financial scenarios

VOLUME 2 FEATURES:

- **Complete Word Processing Package** with:
 - Cut-and-paste, full formatting capabilities, Margin Justification, Page Numbering
 - Access to programmable printer capabilities
- **4 action screens game!** "SPOOK CASTLE!"
- **Children's educational game:** counting
- **Learning to Program in BASIC** — Lesson 2: Array & string variables, FOR-NEXT loop
- **8 Queen's puzzle** with solution
- **Loans and Mortgages program**
- **File backup/copy program utility**

VOLUME 3 FEATURES:

- **A complete Typing Tutor program** Use the built in lessons or create your own! Complete with self evaluator
- **Arcade action game** "Chomper" — 4 screens to complete at each level
- **Mind puzzling strategy game:** "Cubic"
- **Home Budgetter program**
- **Report Generator** (used with Vol. 1 database)
- **Tutorial:** Powerful sorting techniques
- **Learning to Program in Basic:** Lesson 3: PEEKs, POKES, print controls, multi-dimensional arrays and subroutines

VOLUME 4 FEATURES:

- **The Gold Disk Art package** High-res joystick controlled painter prgm with these powerful features:
 - Preprogrammed shapes
 - 'Fill' capabilities, Free drawing mode
 - 'Undo' capability for error-correction
 - 'Print' capability, Zoom
- **The Gold Disk Trivia Game** with — Over 500 questions, Multi player, scoring
- **Arcade action game** with 3D graphics
- **Educational:** File operations on the C64
- **Programming Tutorial:** Binary Search technique illustrated
- **Complete checkwriter program**

"I highly recommend this series"

James Gracely, COMMODORE

"I've always thought good programs cost a lot more. Now there's Gold Disk."

Karl Hildon, TRANSACTOR

"A great way to get inexpensive quality software"

L. Redgers, TPUG Magazine

"The products low price, high quality and simplicity of use, make it an excellent addition..."

CLASSIC Bookshops

"Gold Disk remains on top." DASHER INDUSTRIES, Distributor

"...the right kind of product at the right prices."

COLES, THE BOOK PEOPLE

"Gold Disk idea's time has come."

Phil Kemp, INPUT Magazine

VOLUME 5 FEATURES:

- **The Gold Disk Sprite and Font Editor package** Joystick controlled graphic package for Sprites and character graphics with:
 - Multi-colour capabilities
 - High resolution capabilities
 - Easy to follow instructions
- **Challenge game:** "Kode Breaker"
- **Arcade action, arcade graphics game:** "Cosmic Chaos" — Outstanding play!!
- **Educational Tutorial:** How to Use Sprites
- **"Knights Tour"** with solution

VOLUME 6 FEATURES

- **Enhanced Basic**
 - Over fifty powerful new commands and functions
 - Increases programmer productivity
 - Simplifies programming
 - Easy-to-use
- **Action Strategy Game** "Rogi Ginbani"
- **4 Screen Game:** "Return to Spook Castle"
- **Sound Tutorial** — Part I
- **Tutorial** on "Disk Manipulation"
- **Educational:** Encoding — Decoding
- **Financial Options Program** — Evaluate different payment scenarios

VOLUME 7 FEATURES:

- **Full Spreadsheet Program**
 - Ability to evaluate "What if" scenarios
 - Powerful and easy-to-use tool with
 - Large Worksheet, Variable width columns
 - Internal File Operations, Printer Option
- **Casino Pack** "Poker" and "Black Jack"
- **Bonus Card Game** "Solitaire"
- **Sound Tutorial** — Part II
- **Tutorial** on error recovery
- **Educational:** Stacks
- **Business:** Balance Sheet

VOLUME 8 FEATURES:

- **FORTH!** The ease of BASIC, the Power of Machine Code Complete implementation of fig. FORTH!
- **The Gold Disk Trivia Game II** — Over 500 new and interesting questions — Multi-player, auto-scoring
- **Arcade action game** "Cube Slinker" 3D action, multi-level
- **Programming with Forth** Part I
- **Tutorial** — Screen manipulation
- **Educational** — working with queues
- **Business:** Compound and Simple Interest

VOLUME 9 "CARDFILE" AND VOLUME 10 "MUSIC SYNTHESIZER" NOW AVAILABLE



2179 Dunwin Drive, #6, Mississauga
Ontario, Canada L5L 1X2
P.O. Box 1540, Buffalo or
N.Y. 14205 - 1540

PRICES	SINGLE ISSUE @ 15.95 (U.S. FUNDS) OR 17.95 (CDN. FUNDS)
3 ISSUES @ 39.95 (U.S. FUNDS) OR 45.95 (CDN. FUNDS)	
6 ISSUES @ 60.95 (U.S. FUNDS) OR 75.95 (CDN. FUNDS)	
8 ISSUES @ 80.95 (U.S. FUNDS) OR 99.95 (CDN. FUNDS)	
10 ISSUES @ 99.95 (U.S. FUNDS) OR 119.95 (CDN. FUNDS)	

Ontario residents add 7% tax. Phone orders (416) 828-0914

Payment must accompany all orders.

*Commodore 64 is a registered trademark of Commodore Business Machines Inc.

Commodore 64 Troubleshooting and Repair Guide

Author: Robert C. Brenner
Publisher: Howard W. Sams
 4300 West 62nd St.
 Indianapolis, IN 46268
Price: \$18.95

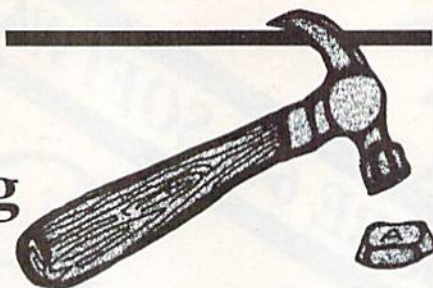
A few months ago, I had planned to write a book concerning the inspection and repair of the Commodore 64 and its peripherals. I'm glad I didn't because author Robert Brenner beat me to the punch with the masterful manual *Commodore 64 Troubleshooting & Repair Guide*.

What underscores the success of this book is Brenner's apparent love of the Commodore 64 and his positive attitude towards his readers. This book is easy to understand, with a conversational tone that makes it a joy to use.

The *Commodore 64 Troubleshooting & Repair Guide* is both a tutorial in basic computer design, preventive maintenance and repair, plus a hands-on guide that helps users quickly spot and fix problems inexpensively. Especially unique is that this book can be successfully used by both beginners and experts alike. There's something in this manual that will appeal to just about everyone.

For example, novices will appreciate someone actually explaining the raw mechanics behind computing power in laymen's terms (how computers work in the first place). They'll see the fundamental parts of the 64 and be shown how these various parts work as a team. Expert readers will appreciate the extremely detailed circuit schematics and step-by-step descriptions on how to spot and easily replace defective or failing components.

Since a major part of successful repair ultimately depends on proper and accurate component identifica-



This book will not magically transform you into a repair wizard, but it will give you a substantial understanding of the Commodore 64's inner workings and what steps to take if those workings should run afoul.

tion, Brenner has devoted a large segment of the early stages of his book to ID markings and values for virtually all of the various types of microchips, capacitors, resistors, inductors, diodes, and transistors used within the 64. More than just an identification guide, the *Commodore 64 Troubleshooting & Repair Guide* points out the role of these various parts and how they relate to each other.

The book then discusses typical component failures: how the 64 fails, how the 1541 fails, and how video displays break down. We're shown the three methods a competent repairperson uses in order to trace a system malfunction: the "hardware approach" (through complex electronic test/trace tools); the "software approach" (via diagnostic software); and the "Commodore-easy approach" (13 deductive reasoning steps with accompanying do's and don'ts).

Although the "software approach" is not extensively covered in this book, an accurate overview is presented, as well as seven specific types of popular diagnostic software. Armed with this information, the end user will have little (if no) problem in selecting diagnostic software,

if that repair approach is desired.

Brenner also notes special safety precautions that should be taken during troubleshooting and repair (for example, he cautions against fixing power-supply problems), as well as mentioning the components that require special handling.

Chapter four is the real workhorse of the entire book, and clearly shows Brenner's genius for clarity. Using the "Commodore-easy" method, he demonstrates the entire troubleshooting/repair procedure for a myriad of grouped failures, in an algorithmic fashion. In other words, he builds a logic flowchart, using thought paths, to analyze the problem. It becomes quickly evident that Robert Brenner thinks the way a good programmer thinks, via a top-down approach, to show that hardware troubleshooting and repair can be reduced to a "program" as well.

In all, over 30 common malfunctions are reviewed in detail, covering five major tasks: start-up problems, run problems, display problems, keyboard problems, and other I/O problems. Clearly this chapter alone is worth the cost of the book, if for nothing more than to help you assist a professional repairperson to quickly zero-in on the right course of repair action. (The reasoning: If you can narrow down the fault options, then the repair choice becomes clearer, saving the repairperson time and your money).

The book then outlines routine preventive maintenance that can be done with everyday tools. We're also shown how heat, cold, dust (and other foreign particles, including cigarette smoke), and noise (electrical) interference all contribute to system disintegration. Electromagnetic radiation, electrostatic discharge, and radio frequency interference are covered in amazing detail. I've never seen as much information compiled on these subjects in any other non-dedicated book.

It also covers topics such as preventing powerline problems, effects of corrosion on the system, corrosion prevention, preventive maintenance for floppy disks and the 1541 disk drive, 15 steps toward longer disk life,

Continued on Pg. 134



Aquarian Software Introduces . . .

I.E.A. Instant Editor Assembler for the Commodore 64

- ★ Written 100% in machine language
- ★ Assembles 17K source code in 5 seconds!
- ★ Co-resident editor assembler monitor
- ★ Compatible with HES MON
- ★ Slow-motion code analyzer
- ★ Technical assistance number

"I would have to recommend the IEA Instant Editor Assembler, the BEST VALUE-FOR-PRICE development package on the market!"

Jim Gracely
Technical Editor
Commodore Microcomputer Magazine

"IEA is a nice, simple assembler, good for beginners at an UNBELIEVABLE PRICE!"

Jim Butterfield
"...Should be called the POOR MAN'S MERLIN — a great assembler, and you can't beat the price."
William B. Sanders
Author of Assembly Language For Kids

Now Only \$17.95

FAST BOOT

Now Available!
Mike J. Henry's
"FAST BOOT!"

The ONLY Fast Booter that works with Both 1541 and MSD Drives!

Relocatable in memory.
Disk Based & Non-Protected

Only \$14.95

TURBO CALC/64

A Great Beginner's Spreadsheet
At an UNBELIEVABLE Price!!

- 100% Memory Resident
- 100% Machine Code and P-Code
- 100% Menu Driven
- Over 13 K RAM for Data
- Large Matrix, 100 Rows by 26 Columns
- On-Line Help Screens
- On-Screen Menu at All Times
- Full Printer Support
- Built-in Functions (SUM, AVG, MIN, MAX)

At last, a powerful, yet affordable spreadsheet!

ONLY \$17.95

Nova Decoder 64

Version 3.0

A 6502/6510 Disassembler
Designed for the Commodore User

A MUST for anyone just learning Machine Language.

A TREAT for those examining the operation of the C-64.

A BLESSING to machine language programmers trying to de-bug their programs.

- Choose Screen or Printer Options
- Addresses Printed in Either Hex or Decimal
- Complete Calculations of Branch Commands
- Brief Explanations of Each Command Encountered
- Generates Tables of Zero Page Addresses Used, Branch Addresses, All Jump Routines, and More . . .

Only \$19.95

The Cataloger

The Ultimate Disk Cataloging
System for the 64!

Will find any program instantly. Tells exactly which disk number the program is on, the disk name, disk ID, front or back of disk, category (games, utility, music, etc.), if the disk is protected (if so, what errors), the date the program was entered, the block count, and any comments concerning that program. Sort and print a list by any of 12 different fields.

Features of The Cataloger V3.5A Include:

- Easy loading of information. Loads directly from the disk itself.
- Ability to change name of entry.
- Ability to change any information instantly — uses relative files exclusively.
- Search, Sort and Print by any of 12 fields.
- Capacity for 1100 different programs (or disks) per data disk.
- FAST — all machine language.
- Menu driven — very easy to use.
- Works with ALL printers.
- Works with one or two drives.
- Allows duplicate ID's.
- Allows selection of items to be entered.
- Unlimited category names.
- FREE updates — new features added periodically.

Only \$24.95

Modem Master

The Fastest Commodore
BBS Available!

- Works with 1541 or MSD Dual Drive
- 300/1200 Baud Operation
- New Punter File Transfer Protocol
- Fully Menu Driven
- Over 25 Commands
- Public Message Base
- Private E-Mail Base
- E-Mail Check at Sign-On
- Sub-Directories for File Transfer
- 250 User Capacity
- Accurate Clock/Calendar
- Printer Output
- Information Files
- "Old" E-Mail Deleted After One Week
- User Survey/Poll
- Set Up in Only 10 Minutes!

Only \$29.95

Omiterm Terminal

- Fully supports the new 1660 Modem 300!
- Punter protocol — upload & download — 300/1200 baud
- Ten programmable function keys
- 15 number phone directory
- 20k receive buffer
- Tone or pulse dialing
- Auto dial/re-dial
- Half/full duplex

Only \$19.95

BOOKS!

Easy Script Simplified.....	\$5.00
Printer Codes and Interfaces.....	\$5.00
1541 Revealed.....	\$5.00
Programming Development Language.....	\$5.00
I'm Sorry, But I Don't Speak Hexadecimal.....	\$5.00
1541 Survival Guide.....	\$5.00
Computer Talk.....	\$8.00

Call For Details

Canadian Best-Sellers NOW Available in the U.S.

The Gold Disk Series

Quality Software for Your 64 at an Affordable Price!

Only \$14.95 Per Disk*

* Plus Shipping and Handling

Each Disk Contains:

The Feature Program
A Home Business Program
And MUCH MORE !!

Two High-Quality Games
Tutorials on Programming

Volume 9 Now Available —
Featuring an Icon-Driven Card File
Volumes 1 through 8 Are Also Available

Dealers Welcomed! Call (503) 654-2641 For Details.

Aquarian Software

P.O. Box 22184
Portland, OR 97222



To Order, Call: (503) 654-2641

VISA and MasterCard Accepted

Add \$3.00 Shipping and Handling Per Order

Dealer Inquiries Welcomed!



Now Commodore giant leap forward

Introducing Viewtron.
The new service that's
easier to use, and faster
to operate. At a price
you may never see again.

Viewtron represents the newest, most advanced generation of on-line services. And it's less expensive to buy, less expensive to use. It's a complete service that includes information, shopping, home banking, messaging, air fares, schedules, and much more.

Viewtron is so much easier to use than other services because its sophisticated navigational structure uses everyday English keywords rather than arbitrary meaningless codes. Our system makes it faster getting around. So it saves you time. *And that saves you money.*

For instance, just type "stocks," "encyclopedia," or "news" when you want the latest stock market data, educational material, or up-to-the-minute news. You can even create your own keywords.

**A single button can
get you what you need.**

With the touch of one button, you access a keyword file that lets you quickly review information which is particularly important to you. Like the current price of your securities, or your favorite team's stats and scores, or news in your career field.

**Special services exclusively
for Commodore owners.**

Viewtron lets you "Ask the Experts" for answers to Commodore questions. Or order bargains on hot-selling Commodore software. And you can bid on software and hardware in our electronic

auction, where prices keep dropping instead of rising. Plus you get other services like Commodore software reviews. With Viewtron, you can also download free software.

What's more, Viewtron is the only complete on-line service that *runs in color* on Commodore machines.

Pay only for what you use.

Viewtron charges no subscription fee and no monthly minimum. You pay only for what you use. Just 9 cents a minute weekday nights (after 6 pm) and weekends; 22 cents a minute weekdays*. And unlike other services, we don't charge extra if you use a 1200-baud modem.

You can access Viewtron on any of three communications networks, UNINET® GTE Telenet®, or TYMNET® (A local call for most people.)



An unbeatable deal. An unbelievably low price for a modem, and the software is free. Get Viewtron, plus a 300-baud Westridge 6420 by Anchor Automation. The modem plugs into your Commodore and amazingly enough at this low price it has Auto-Dial and Auto-Answer. Satisfaction guaranteed. Order now.

LEAP ON THIS DEAL WHILE YOU CAN.

Call 1 (800) 543-5500. Dept. 9002. Or mail coupon:

Viewdata Corporation of America, Inc., Dept. 9002, P.O. Box 317678, Cincinnati, Ohio 45231.

NAME _____

ADDRESS

CITY/STATE/ZIP

PHONE NUMBER _____

Credit cards only; sorry, no checks.

Charge to: ☐ MasterCard ☐ VISA ☐ American Express

Card
NumberExpiration
Date

SIGNATURE: _____

Yes, send me one of the Viewtron offers checked below

VIEWTRON STARTER KIT

☐ for my Commodore 64 or 128. Only \$9.95.

MODEM PACKAGES FOR COMMODORE 64 or 128

- ☐ 300 Baud Westridge 6420 by Anchor Automation with FREE Viewtron Starter Kit. Only \$49.95.
- ☐ 1200 Baud Volksmodem 12 by Anchor Automation with FREE Viewtron Starter Kit. Only \$189.95.

SATISFACTION GUARANTEED or your money back. All modem offers include a cable (where necessary) to connect the modem to your computer. If for any reason you are not satisfied, send back the merchandise within 30 days to receive a full refund. Sorry, no C.O.D.s. Allow four weeks for delivery. Shipping included. Florida, Illinois and New York residents will have the appropriate sales tax added to their order.

Viewtron®

A leap forward in on-line services.

To order, mail the coupon or call 24 hours a day, 7 days a week, 1 (800) 543-5500. Ask for Dept. 9002. Satisfaction Guaranteed.

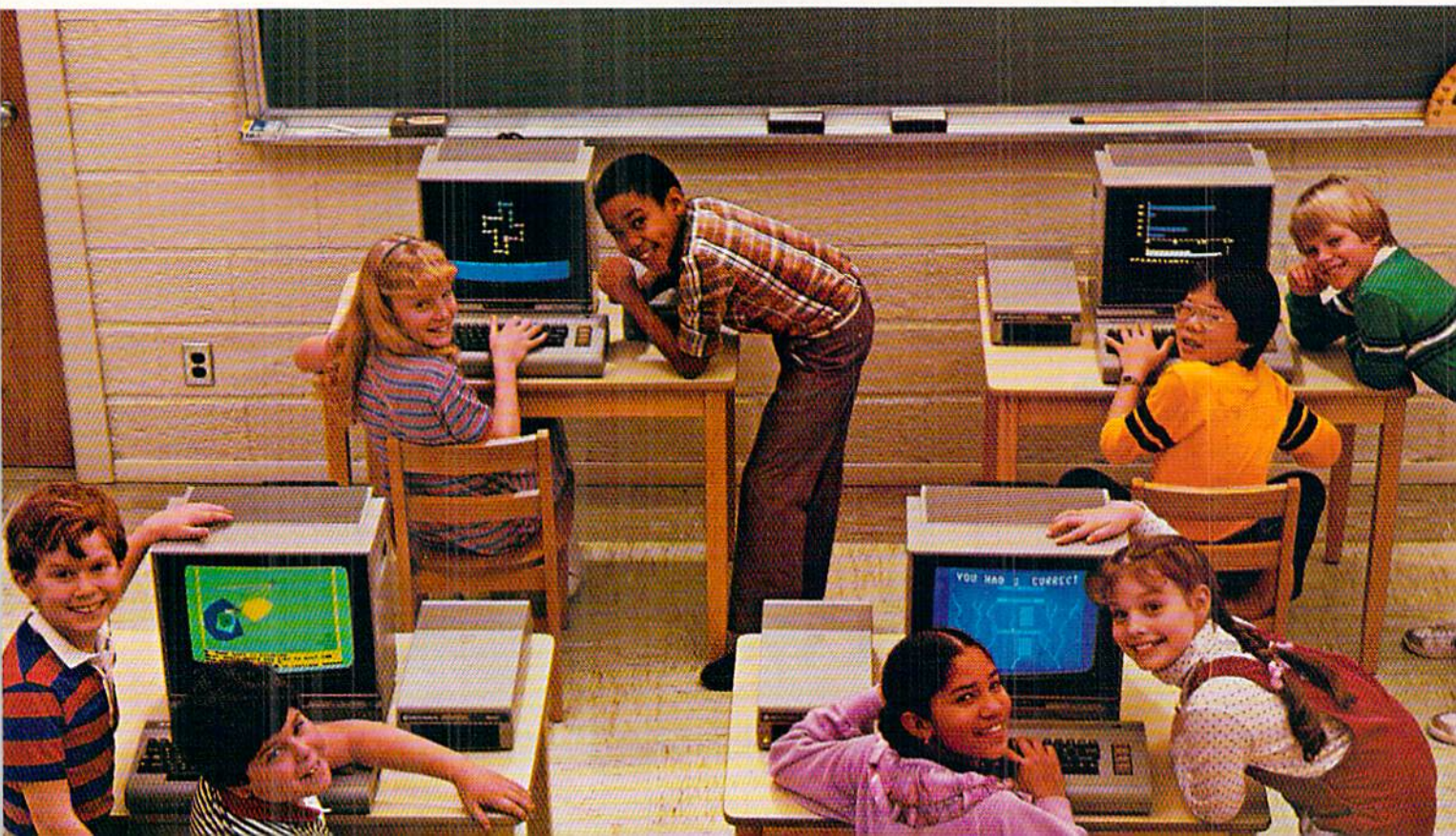
Viewtron® is a service of Viewdata Corporation of America, Inc., which is a wholly-owned subsidiary of Knight-Ridder Newspapers, Inc., one of America's largest communications companies. Commodore 64™ is a trademark of Commodore Electronics, Ltd.

*Viewtron is not available in all cities. Prices may vary in some cities.

****Your free hour is available weekdays after 6 pm and weekends.**



WHY THE COMMODORE 64 ISN'T IN A CLASS BY ITSELF.



At Commodore, we think it's easier for school children to learn about a computer by using it rather than by waiting to use it.

So, we sell the Commodore 64™ at about half the cost of comparable computers.

With the money you save on the Commodore 64, you can afford the things you'll really need: more Commodore 64's.

In fact you can create a powerful but economical "Local Network" with 8 computers sharing one disc drive.

The Commodore 64 features: 64K memory, 66 key typewriter-style keyboard, 16 color high resolution graphics, 9 octave music synthesizer and 3-dimensional sprites.

And the same commitment we make to hardware, we're making to software. We have highly rated Logo and PILOT programs. Much of the well recognized MECC™ courseware and the Edufun™ Series from Milliken will soon be available. There are hundreds of other programs, including a wealth of public domain software for the Commodore 64. Our newest additions are 30 early learning programs from Midwest Software.

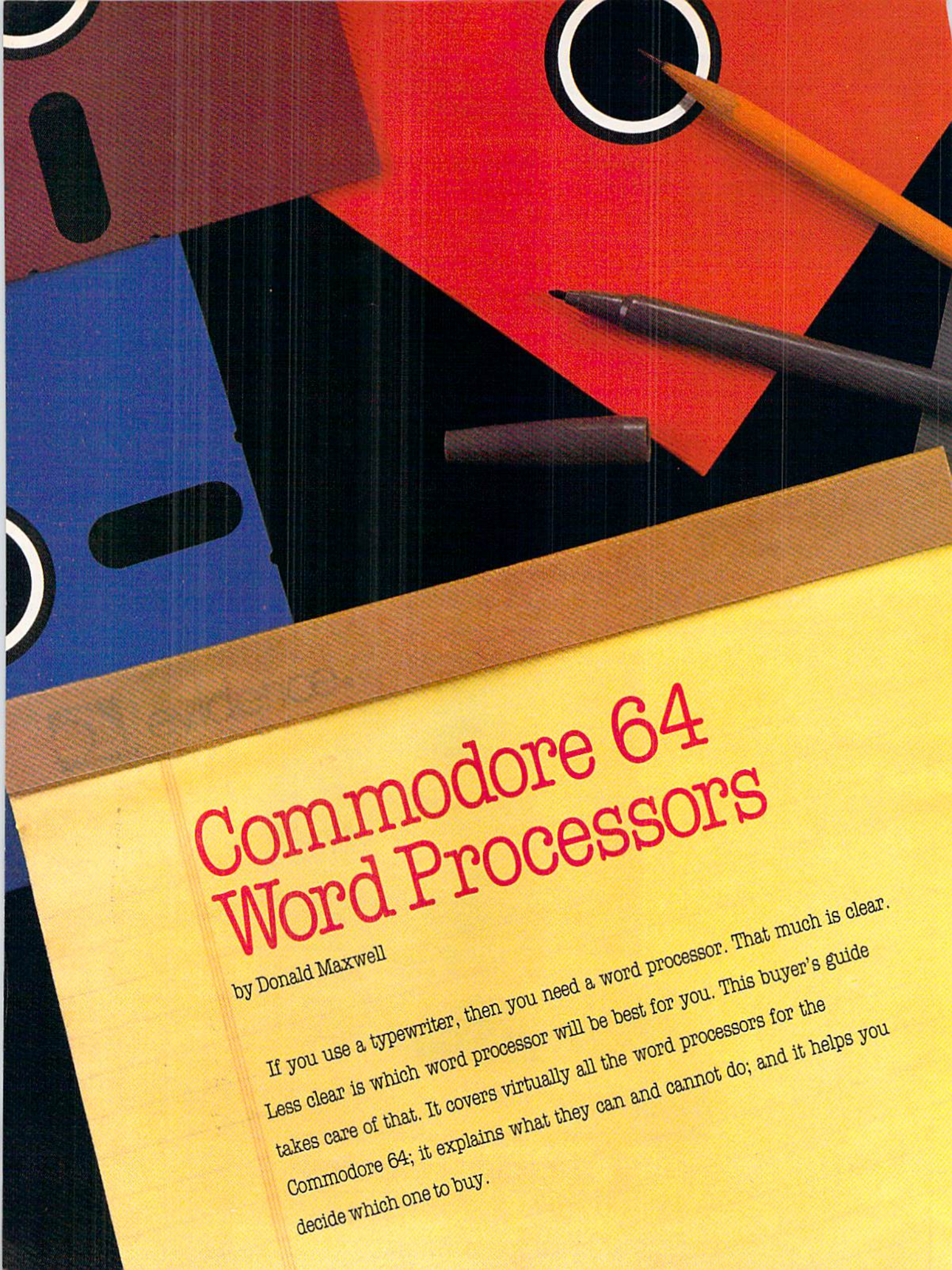
So you see, the all purpose Commodore 64 really is in a class by itself.

For further information on the Commodore 64 and our 250 Educational Resource Centers, contact your nearest Commodore Education Dealer.



 **commodore**
COMPUTERS

Commodore Business Machines Inc., P.O. Box 500M, Conshohocken, PA 19428. Canada—3370 Pharmacy Avenue, Agincourt, Ont. Can. M1W2K4.
Edufun and MECC are trademarks of Milliken Publishing Company and Minnesota Educational Computing Consortium respectively.



Commodore 64 Word Processors

by Donald Maxwell

If you use a typewriter, then you need a word processor. That much is clear. Less clear is which word processor will be best for you. This buyer's guide takes care of that. It covers virtually all the word processors for the Commodore 64; it explains what they can and cannot do; and it helps you decide which one to buy.

First, here's a quick example of what word processors can do. Much as I appreciate them, the term "word processor" seems awkward, and I hate typing it. Fortunately, however, I can merely type "wp" whenever I mean "word processor" and then later, with the touch of a few keys, automatically change every "wp" to "word processor." It's wonderful—the best of two worlds. I can use the term without having to type it each time.

Word processors can also:

- Move words or sentences—even entire paragraphs—from one place in your written text to another with no fuss or muss.
- Change, add, or delete text anywhere you like. No erasures or messy places show up on the paper.
- Find a certain character, word, or phrase, and automatically change it to anything you specify.
- Center titles and other lines of your writing.
- Adjust margins with the touch

of a few keys.

- Store your writing on a disk or a tape and retrieve it later on for reproducing or editing.
- Print "personalized" form letters by automatically inserting names, addresses, etc., wherever you specify.

For a complete list of word processor features, see Table 1.

Choosing a Word Processor

In choosing a word processor, the most important consideration is to identify what type of person will be using it. Fortunately, this is easy because, as far as word processing is concerned, there are only three types of people—"writers," "cyberphobes," and "others."

By "writers" I mean people who want to use a word processor mainly for getting ideas onto paper—in the form of letters, school compositions, grocery lists, business correspondence, stories, even books or articles like this one. The last thing a writer needs is to be aware of the machine while trying to think of what to say. So for writers, a word processor should be "transparent," a practical

tool they don't have to think about while concentrating on writing.

"Others" includes people such as professional typists and programmers. Although typists and programmers might seem to have very different needs, they tend to prefer similar kinds of word processors.

Professional typists generally do copy typing. That is, they don't *write*, they *type*, and so they use word processors very differently than "writers" do. Their aim is to produce typed copy fast and efficiently, and they often need to do unusual formatting. Therefore, they need every word processing function they can get, regardless of how much concentration it takes to use it.

Programmers, on the other hand, may not do much writing or typing at all, so they probably don't need all those special features. However, they appreciate the sophistication of the

software. They're in the "others" group because they generally just don't feel comfortable with the simpler, practical word processors.

And "cyberphobes"? They *dread* computers. Unfortunately, many people are cyberphobic—there may even be some in your own family. If they are going to use a word processor, it will have to be very simple and very user-friendly. If there's a chance that a cyberphobe might be using your computer for writing, then you should consider getting more than one word processor.

Making the Choice—Types of Word Processors

Conveniently, there are also three main types of word processors.

- Those that do *everything*. These are often called "full-featured" or "powerful." Most recent word processors are of this type, and most of them will sat-

used without intruding on the writer's thoughts.

- Those that are very easy to learn and use. Most of these are severely limited in what they can do, but they are so "friendly" that they make converts of even the most confirmed cyberphobes. They are also good for young children, and because they don't have to be re-learned, for those who will use them only infrequently.

Other Important Considerations

The evolution of word processors has been at least as rapid as that of personal computers. So far, however, the perfect word processor has not been created. But the Commodore 64 is such a popular computer that there are *dozens* of different word processors for it, each with its own strengths and weaknesses. So even after you determine which general *type* suits you best, you will probably

your piece of writing is arranged correctly without resorting to the printer? Happily, most modern word processors provide a way for you to check the format. There are several different approaches to this:

- The folded line. This displays your text so that any line which extends beyond the 40-column limit of your screen is continued on the next screen line. Folded lines work fine for proofreading, but not for checking the format.
- The 40-column scrolling "window." This treats your 40-column screen as if it were a window in front of your text. Using the cursor keys, you scroll the screen from side to side, which allows you to see the entire width of the text—but only 40 columns of it at a time. This is all right for checking format, but it makes proofreading difficult.
- The 80-column preview map. This shows you a *diagram* of your text, with one tiny dot representing each letter. You can't read anything, but you can see the general shape of the text well enough to check on the format. You do your proofreading in the edit mode.
- The true 80-column preview output. This shows you your text in half-width letters, so that as many as 80 can appear on each line of the screen. You can't type in this mode, but you can check the format easily. And with a monitor or *very* sharp television picture, you can also proofread. To make any changes in the text, you first have to return to the edit mode.
- The true 80-column edit. This enables you to see up to 80 columns of text *while you type*. What you see on the screen can be formatted exactly the way it will appear on paper. Furthermore, you can see twice as much text at any one time. The 80-column display is harder to read, however, especially on a color television, so to use an 80-column word processor comfortably you will probably need a monitor. So far, only a very few word processors can provide true 80-column editing.

There are three main types of word processors: those that do everything, but are difficult to learn; those that are relatively "transparent" and don't intrude on the writer's thoughts; and those that are very easy to learn, but don't have many features.

isfy the needs of "others." Unfortunately, many of them also tend to be rather "opaque." This is because they require you to remember many commands. They are, therefore, hard to learn and have to be re-learned if not used almost constantly. And until you become really expert—which may take weeks—you have to think about them as you use them. Some manufacturers have tried to get around this problem by the extensive use of command menus. However, most of this type are so cluttered with various levels of menus that they are rather inefficient.

- Those that are practical for writers. Although not necessarily the easiest to learn or the most powerful, they are relatively "transparent." That is, they can be

have to make several compromises in deciding which *specific* word processor to purchase. Another problem is that once you become familiar with one of them, the others are likely to seem clumsy and confusing, even though they may seem just fine to someone else. With that in mind, here are some other things you will need to consider in choosing a word processor.

Display

The Commodore 64 produces a video display that is 40 columns wide. But most things you will want to type are going to end up wider—usually between 60 and 80 columns. This means that what you see on your 40-column screen will be arranged differently when it is printed out on paper.

Then how can you tell whether

- The 80-column adaptor. This produces a true 80-column display, but without the need for the word processor itself to produce the high-resolution 80-column characters. Unfortunately, 80-column adaptors are an extra expense, and many word processors won't work with them.

Word Wrap vs. Word Stream

One of the controversies in word processor design has been over whether a word at the right side of the screen will be divided into two parts if it is too long to fit on the line, or whether the whole word will be "wrapped"—moved completely—to the next line.

From my own point of view, there are two ways of thinking about this. On the one hand, broken words are somewhat harder to read than wrapped words (although most persons quickly get used to it). On the other hand, most word processors that do word wrapping don't provide any way for you to see how many spaces there are at the end of each screen line. When the text is printed, therefore, you may end up with extra spaces between words. A few recently developed word processors solve this problem by providing space-markers or end-of-screen line markers.

Control

One of the most important considerations is whether or not you can break off writing and edit some other line of text without having to change modes. This is probably somewhat less important to a copy typist. But it's extremely important to a writer, because—contrary to what old-fashioned English teachers might like to think—almost no one writes straight through from beginning to end. Most real writing is done in a recursive fashion, with lots of skipping backwards and forwards to make changes. This ability to skip around at will is called "full-screen editing," and in word processing it means that you can go anywhere in the entire text.

Beyond the write/edit matter, there are three main approaches to telling a word processor what to do.

- **Mnemonic** commands. This approach generally uses the CTRL key to turn other keys into

Table 1. Word Processor Features

Standard Features Every Word Processor Should Have

Writing and Editing	Printing
write and edit in the same mode	headers
change text	footers
delete text	Filing
insert text	load from the disk directory
copy text	save part of a text
move text	full range of disk commands
find a specific portion of the text	
find and replace text with some other text	
set margins	
set length of page	
center text automatically	
include text enhancement commands (underline, italics, boldface, superscript, subscript, etc.)	
preview the format before printing	
Printing	
link files	
mail merge	
send special printer codes	
begin printing at a specific page	
automatic page numbering	
Filing	
display disk directory without disturbing the text	
store text	
retrieve text	

Extra Features of Full-Featured Word Processors

Writing and Editing	Printing
rapid delete (character/word/sentence/line/paragraph/block/all)	print from cursor location
delete to the right of cursor	alternate character sets
capital letters without shift	double-column printing
automatic paragraph indentation	interrupt printing or previewing for correction, then resume at top of same page
left margin release (outdent, as in an outline)	Filing
conditional page (prevents orphans and widows)	save part of a text
conditional hyphen	change file type (sequential to program)
decimal tab	ASCII output
boilerplating (common phrases)	text appears on screen while loading
building-block variables	works with tape datassette
right justify	fast loading/saving (speeds up disk drive)
fill justify	

Fancy Stuff Found in Only a Few Word Processors

Writing and Editing	Printing
delete key buffer	print from cursor location
alphabetize lists	alternate character sets
calculate numbers in columns or rows	double-column printing
move columns of numbers or text	interrupt printing or previewing for correction, then resume at top of same page
align numbers	Filing
transpose characters	save part of a text
non-printing comments	change file type (sequential to program)
count words	ASCII output
space markers/end-of-screen line markers	text appears on screen while loading
place markers	works with tape datassette
extra memory section (for scratch work, temporary storage, etc.)	fast loading/saving (speeds up disk drive)
spelling checker built in	
80-column typing	
80-column preview	
special print styles visible on screen (edit/preview)	
change screen colors	
key click sound	
other sounds	

special-function keys. In most word processors of this type, there is some mnemonic relationship between the key and the function. CTRL-E, for example, is often used as a mnemonic for "erase" and CTRL-S for "save." These examples seem clear enough; but what key would mean "search?" With CTRL-S already taken, several word processors use CTRL-G (G for "global search"). It takes a while to learn which keys produce which actions, but once you've learned them, this approach is fast and effective. A keyboard overlay—a cardboard or plastic sheet that fits on the keyboard—is sometimes used to help you remember the functions of the various keys. This is helpful, but oddly, very few word processors come with an overlay.

- **Spatial** arrangements of special-function keys. This is similar to the mnemonic approach, except that there is no attempt to make the key names relate to the function they produce. Instead, the whole row of number keys works with CTRL and the Commodore key. An overlay (supplied with these word processors) is taped to the keyboard, just above the row of special-function keys, so that identifying them is easy. This approach can provide up to 28 easily-selected functions (in addition to the eight regular function keys) when every key in the top row is used.
- **Menu** displays. This approach puts the functions on the screen, rather than on the keyboard. Generally, you make selections by moving the cursor to the name of the function you want and then pressing RETURN. From the user's point of view, there is a certain elegance to this method, since it keeps your attention on the screen, and it may be the easiest for beginners. However, most menu-driven word processors turn out to be rather cumbersome and slow, especially when a menu contains several layers of the sub-menus.

Many word processors provide "help" displays so that you don't

Even the worst word processor will beat a conventional typewriter for most writing or typing jobs. But hands-on experience is needed if you want to find the one that is exactly right for you.

have to dig into the manual. These are more helpful if they reside in the computer's memory, as the delay while a help file loads from the disk can be frustrating. (When you first use a word processor, it may seem to be going faster than you are. This sensation lasts only a short time, and then you are likely to find yourself waiting impatiently for it to do its job.)

Printer Connections

If you have one of the Commodore printers, you have nothing to worry about here. If not, then you will want to look for a word processor that talks a language your printer can understand. Another thing to consider is that some word processors require you to embed "printer codes" in your text, especially the codes for underlining, bold-face print, and the like. Some of the more recent word processors provide easier ways of achieving the same effect—special menus, for example—although embedding codes may be faster, once you get the hang of it. Some word processors provide special "printer driver" programs, one for each of the popular printers. Others permit you to make up your own file of embedded commands that you load at the beginning of each text. This approach may seem clumsy, but on the other hand, it's an easy way to make up customized printer drivers for different purposes.

Disk or Tape

Another consideration when selecting a word processor for the Commodore 64 is whether you will be using it with a disk drive or a tape datasette. Here your choices are limited because nearly all of the word processors available require a disk drive. But two that I know of are in cartridges and can store text on either disk or tape. (These are also among the more interesting word processors.) A few others can be copied from disk to tape.

Specific Features

There are so many different word processors and so many different features that I have listed them in two accompanying tables. Table 1 identifies the standard features possessed by virtually all word processors, the extra features in full-featured models, and the really fancy features that only a few word processors possess. Table 2 (on pages 118-121) lists specific word processors, shows whether they possess certain features beyond the standard ones, and identifies their notable strengths and weaknesses.

Some Especially Interesting Word Processors

As you see in Table 2, there are many fine word processors for the Commodore 64. Before you peruse it, however, it might be a good idea to take a closer look at a few word processors that are especially interesting. By understanding their special attributes, you will be better able to interpret the chart and to settle on the right word processor for you.

Paperclip: Many people think this is the *non pareil* of Commodore word processors. More than full-featured, it does almost everything. Although you write in streaming text on a 40-column screen, you can switch easily between a 40- or 80-column preview display. Also, it's one of the few designed to work with an 80-column adaptor (although on-screen text formatting is not automatic). It alphabetizes lists in ascending or descending order, and it adds columns and rows of numbers. It moves columns both horizontally and vertically. It even displays incoming text on the screen as it retrieves a disk file. Editing is made especially easy because you can

Continued on pg. 116

Word Processor Publishers

buyer's
guide

Publisher	Product	Publisher	Product
Abacus Software P.O. Box 7211 Grand Rapids, MI 49510	Textomat-64	Human Engineered Software 390 Swift Avenue, #14 San Francisco, CA 94080	OmniWriter & OmniSpell
Batteries Included 30 Mural Street Richmond Hill, Ontario L4B 1B5 Canada	HomePak PaperClip	Input Systems, Inc. 15600 Palmetto Lake Drive Miami, FL 33157	Typro
Broderbund Software 17 Paul Drive San Rafael, CA 94903	Bank Street Writer	Intelligent Software Box A San Anselmo, CA 94960	The Package
Cardco, Inc 300 S. Topeka Wichita, KS 67202	Write Now!	Mirage Concepts, Inc. 2519 W. Shaw No. 106 Fresno, CA 93711	Word Processor-Professional
Circadian Software Box 1208 Melbourne, FL 32902	CircaScript	MMG Micro Software P.O. Box 131 Marlboro, NJ 07746	Word Commander 64
Commodore Business Machines 1200 Wilson Drive West Chester, PA 19380	East Script Magic Desk Word Machine/Name Machine	Muse Software 347 N. Charles Street Baltimore, MD 21201	Super-Text
COMPUTE! Publications, Inc. P.O. Box 5406 Greensboro, NC 27403	SpeedScript	Prentice-Hall P.O. Box 819 Englewood Cliffs, NJ 07632	SkiWriter II
Creative Software 960 Hamlin Court Sunnyvale, CA 94089	Creative Writer	Professional Software, Inc. 51 Fremont Street Needham, MA 02194	Fleet System 2 WordPro 3 Plus/64
Datamost 19821 Nordhoff Street Northridge, CA 91324	Kwik-Write!	Pro-Line Software 755 Queensway East, Unit 8 Mississauga, Ontario L4Y 4C5 Canada	WordPro 64
Datasoft 19808 Nordhoff Place Chatsworth, CA 91311	Letter Wizard	Richvale Telecommunications 200 W. Beaver Creek Road Richmond Hill, Ontario L4B 1B4 Canada	Script 64
Design Enterprises of San Francisco P.O. Box 14695 San Francisco, CA 94114	Word Worker	Sierra P.O. Box 485 Coarsegold, CA 93614	HomeWord
Digital Solutions, Inc. P.O. Box 345, Sta A Willowdale, Ontario M2N 5S9 Canada	Paperback Writer	Timeworks, Inc. 444 Lake Cook Road Deerfield, IL 60015	Word Writer
Electronic Arts 2755 Campus Drive San Mateo, CA 94403	Cut & Paste	TriMicro 14072 Stratton Way Santa Ana, CA 92705	The Write File Your Home Office

Commodore Launches the Amiga

End of a Dream, Beginning of a Legend, Dawn of an Era . . .

We asked freelance writer/programmer Louis Wallace to cover the launch ceremonies for Commodore's much-anticipated Amiga personal computer because we know he's honest and tough. Keep that in mind as you read this.

BY LOUIS R. WALLACE

On July 23, several hundred people—a Who's Who of computer and technology writers, editors, reporters, market analysts, software and hardware developers—gathered at New York's Lincoln Center to witness the most impressive introduction of a computer (perhaps any single piece of technology) anyone has ever seen. I am talking, of course, about the new Commodore Amiga personal computer.

I attended this event with mixed feelings. I had very high hopes for the Amiga, and I expected a very impressive machine. Anything less would have been a disappointment. However, even my high expectations did not prepare me for what I saw there. Based upon the demonstrations I observed, the Amiga is without doubt the most powerful, versatile and useful machine on the market today, and it is likely to be the industry leader for some time to come. To give you an idea of its capabilities, imagine taking all that is good about the Macintosh, combine it with the power of the IBM PC-AT, improve it, and then cut the price by 75%. Only then will you begin to approach the power and value of the Commodore Amiga.

There are three main markets in which computers are used. These are business, education and the home. Be-

cause of the Amiga's wide-ranging capabilities, it has a place in all of these markets. This became obvious throughout Commodore's presentation, as one central theme emerged. The Amiga is not just a technological "black box." It is a machine with capabilities that range from traditional computer functions to things as yet undreamed of. And Amiga does it all faster, better and cheaper than any other computer—past, present and foreseeable future.

What makes the Amiga so powerful? Part of the answer is its central microprocessor: the Motorola 68000. This is a 16/32-bit chip, which is able to directly address 16 megabytes of RAM. It also operates at a fast clock rate (7.8 MHz), which means it is able to process information very quickly. By comparison, the IBM PC runs at 4.7 MHz, the IBM AT at 6 MHz, and the Macintosh at 7.8 MHz. So you can see that it is even faster than the IBM AT, which until now has been considered the most powerful personal computer on the market.

But wait, didn't I say the Macintosh also runs at 7.8 MHz? Why then is the Amiga so much more powerful? The answer to that lies in the hardware built into the Amiga. Along with the 68000, the Amiga contains several unique chips that act as co-processors

to the main 68000. There is one chip for sound and peripherals, another for graphics, and a third for animation. This means the main processor only gives the orders for these functions to the co-processors—and they carry out those orders, leaving the 68000 free for other tasks. Since the graphics and sound are hardware devices, they perform at speeds that are truly amazing. When the Macintosh uses graphics, the 68000 processor must do all the work, and it uses software, not hardware to do it, resulting in a much slower display.

Graphics

But there are other reasons the Amiga's graphics are so superior to





Software and hardware developers, members of the press, and market analysts join Commodore and Commodore-Amiga dignitaries at Lincoln Center to launch the revolutionary Amiga computer.

for all the other PC's, and it's not just how fast it draws a line. There are new capabilities here that are unique. For instance, this machine has an animation potential that will rival dedicated video studios. You probably know what sprites are (movable object blocks), and the Amiga, of course, has sprites. You can have up to eight four-color sprites per horizontal scan line—and more if they are separated by at least one horizontal scan line. And you can combine pairs of sprites to give up to 16 colors per sprite. And your sprites can each be up to 16 pixels wide, and 1 to 200 pixels deep!

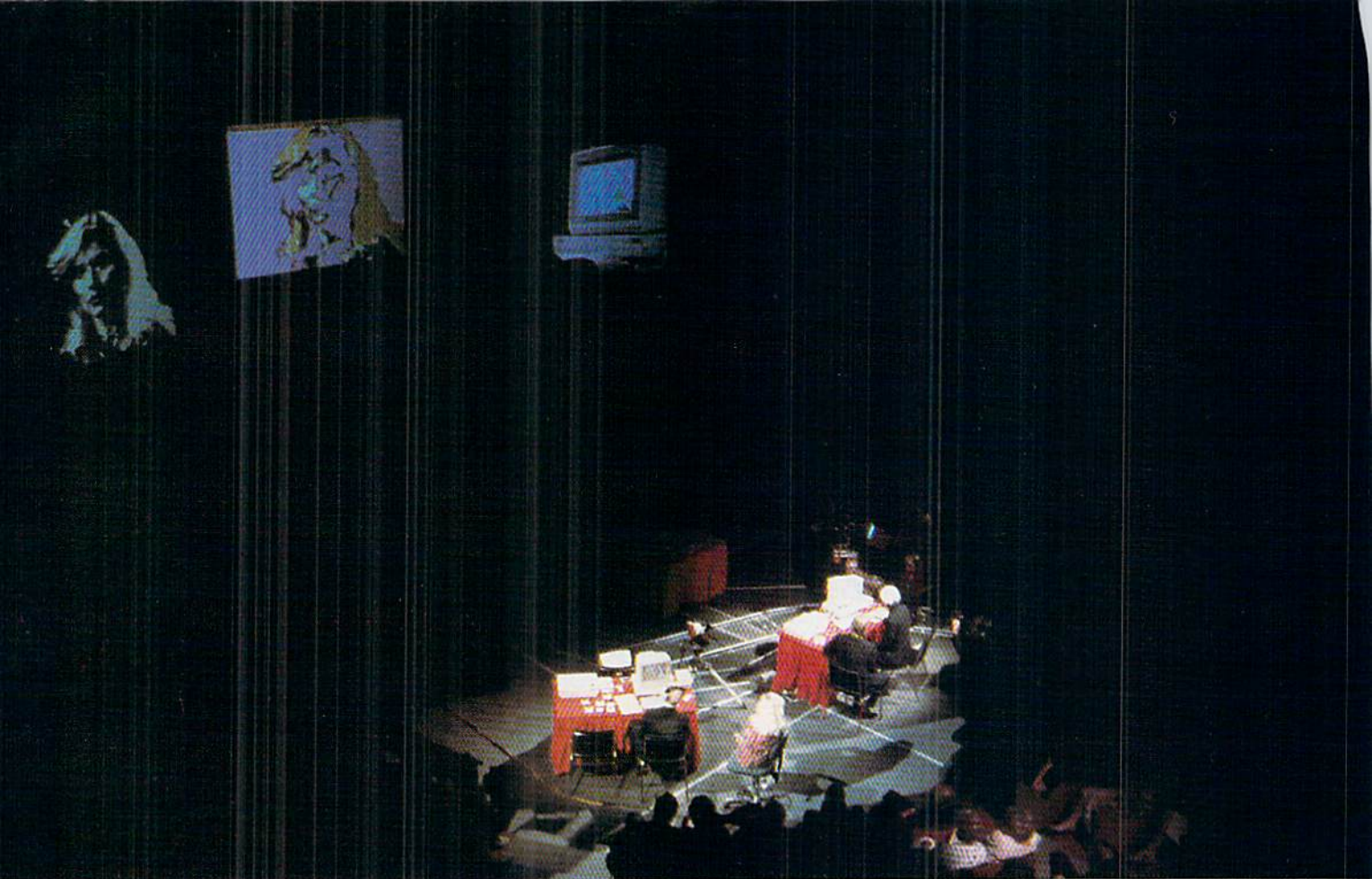
If sprites like that are not enough

for your animation needs, how about the blitter? Basically, a blitter is a bit-mapped block transfer that is done by the hardware, not software, and performs at speeds that will simply amaze you. It allows for bit-mapped animation that until now was not practical.

And there is more! The Amiga has other animation techniques called GEL's (Graphic Elements), of which there are four main types. First is the "VSprites," or virtual sprites, which are related to regular sprites, but is really a data structure controlled by the animation ROM. A second GEL is called BOB, (Blitter Object), a section of the bit map that acts like a sprite,

but can have up to 32 colors. Third you have "Animcomps," which are composite objects made up of the fourth type, "animobj," or animation objects. Animcomps are several animobjs (objects) that can be made to move as one object. Frame changes can be defined for each animobj, each at a different rate if needed.

You get around in the Amiga by using either the keyboard or a two-button mouse. The mouse can be used to control an icon-like environment called Intuition. This is the main user interface to the Amiga, managing the graphics, windows, screens and the pull-down menus. Each screen has its complement of menus, and these



Avant-garde artist Andy Warhol uses *Graphicraft* software from Island Graphics to create a portrait of rock artist Debbie Harry on the Amiga. (Image of Debbie Harry ©1985 Andy Warhol Productions. Reprinted with permission.)

menus can have other pull-down menus inside. The mouse is used to select options, but the keyboard can also be used, if you wish.

You can also design the menus you use, and also the screens the menus are in. Each screen can have any graphics mode you desire, and Amiga engineers report that they have created up to 50 levels of overlapped windows. (More than any application I could think of.) These screens can be smoothly scrolled in any direction you wish, simply by clicking the mouse at the proper location. It doesn't matter what graphic mode you are in—low-res (320x200) or the highest resolution (640x400). When you wish to scroll a screen, it moves as smoothly as cold butter in a hot pan.

Intuition also includes Workbench, another icon-based control program. It's here you control files and programs, transfer data between programs, and design the screens you want to use and the menus they contain. Both Intuition and Workbench are very powerful systems that help the user control the Amiga. But if icons get in your way, you can bypass them and go directly to the operating

system using typed-in commands.

During the demonstration, we were treated to examples of graphics that I would not have believed possible on a microcomputer. For instance, a large colored ball bounced around the screen and was rotating in three dimensions as it bounced. Its shadow acted like a real shadow, darkening what was beneath it but not hiding the background. As someone who has a strong interest in 3D graphics, I can tell you it was a real pleasure watching these real-time, flicker-free displays.

Since text is treated as another form of graphics, there is not a sharp division between text and graphics modes, as there is in many other computers. In fact, you can freely mix fonts, text sizes, bit-map displays and animation. And the text fonts can be in italic, bold, extended or underlined. The Amiga has a variable screen width, from 30 to 80 columns, depending on your needs at the time. It will even allow for proportional print. One obvious use will be in graphic design studios, where, combined with laser and color printers, the Amiga will soon become the workhorse of a new low-

cost high-performance graphics workstation.

To let you harness the Amiga's graphic power, several packages are available, each aimed at different types of graphics and different user needs. Island Graphics, of Sausalito, California, has several new programs. Island Graphics is considered an industry leader in computer graphics, and their work is used on graphics systems costing many times the price of the Amiga. They are top-notch graphics professionals. For the Amiga, they have *Graphicraft*, which is a painting/art package that takes advantage of the Amiga's incredible abilities. It was this program that was demonstrated at Lincoln Center by none other than Andy Warhol with rock star Debbie Harry as a model. The results were, like the model, beautiful.

Island Graphics also has *Presentationcraft*, a business presentation package that gives you 3D business graphics like bar and pie graphs (expanded 3D pie graphs), plus many special effects that will give your boss reason to sit back and take notice. Island has not forgotten the Amiga's fabulous animation abilities

either, as can be seen in *Moviecraft*. This uses advanced animation techniques to produce commercial quality animated graphics.

If you, like me, are a fan of Broderbund's *The Print Shop* graphics software, you will be pleased to know they have implemented it on the Amiga, and it is faster and sharper than ever. And A-Squared Systems of Oakland, California, is producing the Amiga Eye, a real-time video digitizer that can capture video images from any NTSC graphic device, such as a camera, tape, or laser disk. These images can be manipulated in a number of ways, and they will also be compatible with other Amiga paint packages for that last little touchup.

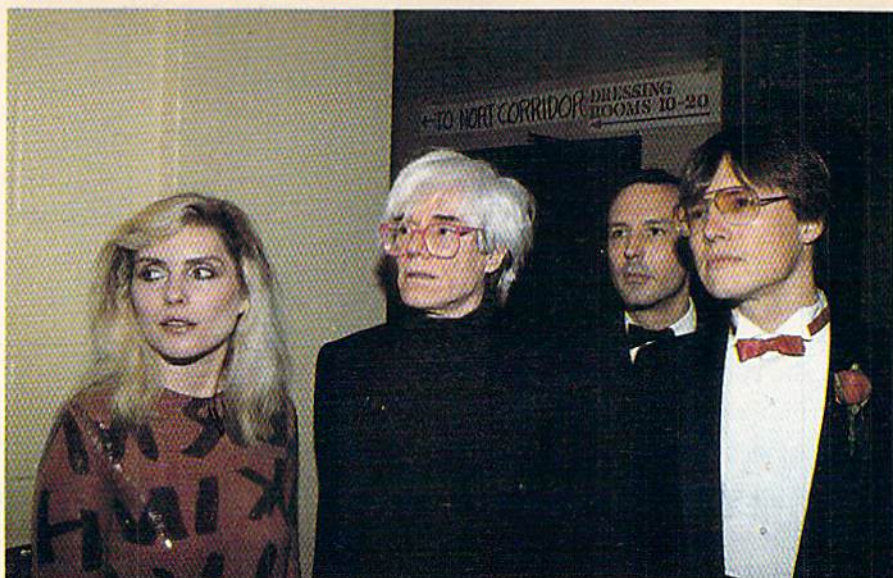
Sound

Sound on the Amiga has opened a new world for the musically inclined user. First off, the Amiga has four independently controlled voices, which you can combine in pairs to give true separated stereo sound. And you are not limited to only four voices, because the Amiga can use virtual voices. These are separately programmed sound channels, each with a given priority. When you are using more than four voices, the system will use only those with the four highest priorities. At the speed this computer operates, you can create the effect of a multi-voice orchestra simply by programming it.

Of course, each voice is defined using four values called ADSR (Attack, Decay, Sustain and Release). Each voice also has a separate volume control with 64 levels, which offers far more versatility than even the SID chip in the Commodore 64 and 128 computers. I might add that I have heard a lot of really good music based on the SID chip, but never any as clear and clean as that produced on the Amiga. When you tell it to sound like a drum, banjo, violin or piano, it produces music so realistic, you will find yourself shaking your head in disbelief.

One of the accessories musicians will want to have, and one that is scheduled to be released at the same time as the Amiga, is a MIDI (Musical Instrument Digital Interface). This will allow you to interface and control up to 16 separate devices from the Amiga, such as synthesizers and digital drums (assuming the Amiga itself isn't enough for you).

Continued on Pg. 130



Rock performer Debbie Harry (l.) waits next to artist Andy Warhol for their cue to go on stage at the Amiga launch. Musician Roger Powell of Cherry Lane Technologies is on the far right.



Thomas Rattigan (center), president of Commodore North America, chats with members of the press at the launch.



Mike Boom, representing Everywhere, Inc., demonstrates that company's *Musicraft* software, which turns the Amiga into a professional four-voice synthesizer and sequencer.

THE BEST OF 1985

In the course of this past year, in both this magazine and our sister publication, *Commodore Power/Play*, we reviewed several hundred products for the Commodore 64. To give you a ready reference—and help you plan Christmas gifts for your computer-using friends and relatives—here

are all those products from our 1985 issues that received high recommendations from the people who reviewed them. There are, of course, many other excellent products on the market in addition to those featured here, but we think you'll enjoy taking a look at our reviewers' top choices.

COMPILED BY THE EDITORS

Productivity Software

Better Working Spreadsheet Spinnaker Software

Disk
\$49.95
See review this issue.

CalcResult Handic Software

Cartridge/Disk
Easy \$49.95 Advanced \$79.95
Full-featured spreadsheet for small business or home. Two versions: easy version on cartridge, advanced version on disk.

Creative Writer/Filer/Calc Creative Software

Disk
\$99.95
Integrated word processor, database manager, and spreadsheet for small business or home. Sold as one package, although each can be used separately.

LEDGER INFORMATION SEARCH			
021005	120	COMPUTER EQUIP	302.40
		EPSON RX-80 PRINT	
022205	510	OFFICE SUPPLIES	35.45
		HOUCK PRINTER RIBBONS	
022305	510	OFFICE SUPPLIES	7.35
		JAFFEY COPYING CHARGES	
022305	510	OFFICE SUPPLIES	43.30
		JAFFEY SMALL HARDWARE	
022805	530	OFFICE	67.30
		CKW 245 RENT AND LIGHTS	
			776.01

PRESS ANY KEY TO SELECT BY NUMBER:

- 0 OPEN THE FIRST INSTA-LEDGER FILES
- 1 * ADD NEW ACCOUNT NO. & DESCRIPTION
- 2 * POST NEW EXPENDITURES TO LEDGER
- 3 * DEPOSIT REVENUE TO THE ACCOUNTS
- 4 RESEARCH INFORMATION & CREATE REPORT
- 5 MONTHLY INCOME STATEMENT AND BALANCE
- 6 END OF PERIOD ACCOUNTING TRANSACTION
- 7 JOURNAL ADJUSTMENTS - DELETIONS
- 8 FILE MAINTENANCE/RECORD SORTING
- 9 BACK-UP FILES AND END PROGRAM

Fleet System 2 Professional Software

Disk
\$79.95
Composed of *Fleet Writer 3* word processor and *Fleet Speller* spelling checker in single package. Full-featured, easy to use. (See "Buyer's Guide to Word Processors," this issue.)

Insta-Ledger Microsci

Disk
\$44.95
Simple accounting ledger system for home or light-duty business. Generates reports and graphs.

Summary of Contributions (Monthly)			
Name	Jan	Feb	Mar
Anders	0.00	0.00	5.00
Bazzara	25.00	25.00	
Baker	5.00	12.00	
Brown	0.00	0.00	1.00
Busey	0.00	25.00	
Hall	12.00	12.00	
Costa	0.00	0.00	
Custer	10.00	10.00	
Ranson	5.00	0.00	
Woods	100.00	0.00	
Buncan	25.00	15.00	
inn	0.00	0.00	
ungsi	15.00	20.00	
Grant	20.00	15.00	



PFS:File/PFS:Report Software Publishing

Disk
\$79.95/\$69.95

Integrated file program and report generator converted from IBM for home use and light-duty business. Very easy to use with excellent documentation. Sold separately. *PFS:File* can be used alone. *PFS:Report* requires use of *PFS:File*.

Power Plan-64 Abacus Software

Disk
\$49.95
See review this issue.

Vizastar Solid State Software

Cartridge and Disk
\$119.95
Integrated spreadsheet, database manager and business graphics in single package for home or small business. Easy to use, excellent manual.

WordPro 64 Pro-Line Software

Disk
\$50.00
Full-featured word processor for home or small business. Proportional spacing, alternating-page and double-column output. (See "Buyer's Guide to Word Processors," this issue.)

Write Now/Spell Now/File Now/Calc Now/Mail Now Cardco

Disk (*Write Now* cartridge)
\$39.95 each (*Write Now* \$49.95)
Integrated word processor, spelling checker, file system, spreadsheet and mail list, respectively. Sold separately, so you can mix and match: Use them separately or together for home or small business. Modular approach excellent for beginners. (See "Buyer's Guide to Word Processors," this issue, for more on *Write Now*.)

Home Applications/ Self-Enrichment

Home Organizer Series Batteries Included

Disk
\$19.95 each
Eight specialized database managers for home use, each sold separately. Series includes: *Audio/Video Catalog*; *Checkbook*; *Electronic Address Book*; *Stamps*; *Recipes*; *Home Inventory*; *Photographs*, *Slides & Home Movies*; and *Mail List*.

Micro Cookbook Commodore Business Machines

Disk
\$34.95
Specialized database manager that lets you organize and search for recipes according to keywords, modify recipes, and put together shopping lists.

Micro Astrologer Commodore Business Machines

Disk
\$19.95
Determines your natal chart and provides daily horoscopes. Allows you to store and print out information. Very thorough and easy to use.

The Newsroom Springboard

Disk
\$49.95
Create a realistic newspaper, generated from a library of more than 600 pieces of art and layout options.





Phone Boss

SoffPeople

Disk

Price not available.

Phone directory for home use. Very easy to use.

The Print Shop

Broderbund Software

Disk

\$44.95

Versatile graphics program for creating greeting cards, banners, letterheads, and signs and printing them out. Includes colored paper and envelopes. Two additional disks available, containing more options.

Speed Reader II

Davidson and Associates

Disk

\$69.95

Designed to improve reading skills for high school students through adult. Approved by National Education Association.

Your Personal Net Worth

Scarborough Systems

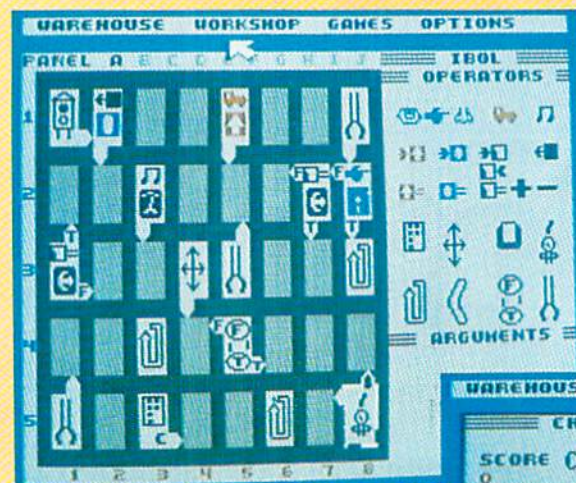
Disk

\$79.95

Personal finance package. Generates balance sheet showing assets and liabilities. Includes Sylvia Porter's *Money Book for the 80's*.



Children/Educational



Chipwits

Epyx

Disk

Price not available.

Learn the basics of computer programming with the help of 16 little robots. Educational and entertaining. Geared toward the beginning programmer.

Build a Book about You

Scarborough Systems

\$39.95

Publish a personalized storybook. Hardcover bindings, end sheets, title page, and illustrated paper for two stories. More binding materials can be purchased. For children ages 2 to 12.

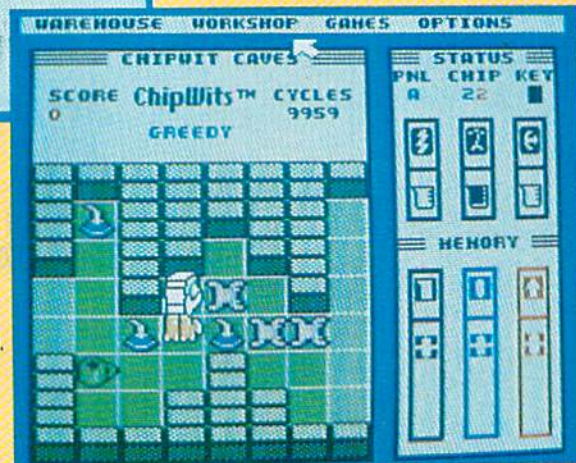
Cell Defense

Human Engineered Software

Disk

\$14.95

Defend your body against attack by virus. Unique three-window game screen. Recommended for children ages ten and older.



Donald Duck's Playground

Sierra

Disk

\$24.95

Designed to teach children ages 7 to 11 how to count cash, make change, pay for purchases, and keep track of assets. Excellent graphics.

Dream House

CBS Software

Disk

\$39.95

Design a home and bring it to life with movement and sound effects. For the young and young-at-heart.



Dungeon of the Algebra Dragons

Timeworks

Disk/Tape

\$24.95

Solve algebraic equations. Combines lively graphics, music and animation with dragons, poisonous spiders, bottomless pits, and ghosts. For children ages 8 to 13.

Forecast!

CBS Software

Disk

\$49.95

Tracks the weather. Temperature and precipitation averages and extremes for the last ten years are included. Manual teaches everything from barometric pressure to importance of wet-bulb thermometer readings. High school level.



Leaps and Bounds

Muse

Disk

\$39.95

Teaches reading readiness skills, number and counting skills, and appreciation of art and music. Ages 4 to 8.

Movie Musical Madness

CBS Software

Disk

\$12.95

You are producer, writer, composer, and director on your own Hollywood sound stage. Store your finished movies on disk. Joystick required.



Operation Frog

Scholastic Software

Disk

\$29.95

Simulation of a bullfrog dissection with a twist—children can put the frog back together again! Excellent documentation.

Playwriter: Adventures in Space

Woodbury Software

Disk

\$39.95

Children seven and up create a customized novel by choosing the plot direction and filling in a bare-bones outline. Production materials included, refill kits available.

Project: Space Station

HES

Disk

\$24.95

Design, launch, assemble and operate a space station while coping with schedules, budgets and public relations. Ages 12 and up.

Sky Travel

Commodore Business Machines

Disk

\$29.95

Learn planetary facts, print out astronomical charts and replicas of the sky, or view any astronomical happening 10,000 years into the past or future. Intended for older children to adult.

Stickybear Series

Weekly Reader Software

Disk

\$29.95 each

Teaches the alphabet, numbers, opposites, shapes, reading, math, spelling and typing. Intended for preschoolers, the programs are hosted by a lovable teddybear. Excellent graphics and sound.

Webster: The Word Game

CBS Software

Disk

\$29.95

Teaches word recognition and spelling. For children of all ages. Younger children may need coaching.

Windham Classics

Spinnaker Software

Disk

\$26.95 each

Text adventure games based on classic tales. Designed for ages ten through adult.

GRAPHICS

Light Pens

Blazing Paddles Baudville

Disk

\$34.95

Graphics program that can use a light pen, joystick, trackball, touch tablet or paddles as the controller. Choice of several typefaces for text. Includes a printer dump.

Cadpak 64 Abacus

Disk

\$39.95

Graphics software for serious applications. Recommends use of the McPen light pen as a controller, but can also be used with the Keyboard. Allows two sizes of hard copy.



Designer's Pencil Activision

Disk

\$34.95

A graphics programming aid, not a direct-drawing program. Lets you create artistic programs using a logical sequence of commands. Requires no artistic ability.

Flexidraw Inkwell Systems

Light pen/disk

\$149.95

One of the best light pens available—very sensitive, with flexible graphics software. Software also has two alphabetic fonts for adding labels or descriptions to your drawings. Light pen will work with other software packages.



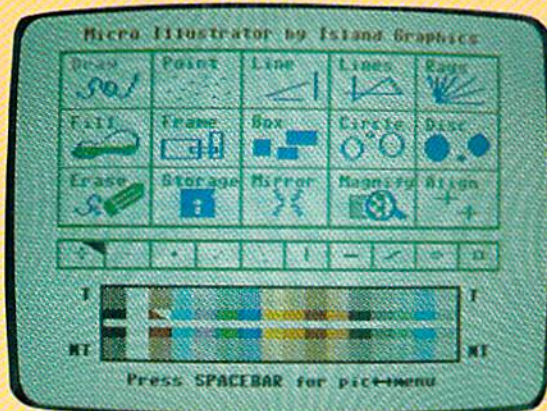
LP10 and LP15 Tech Sketch

Light pen/disk

LP10: \$39.95

LP15: \$89.95

Both pens come with a copy of *Micro Illustrator* software. LP10 is a moderately sensitive pen. LP15 is much more sensitive, allowing more precision.



McPen Madison Computer

Light pen/disk

\$49.95

Accurate light pen with sensitivity adjustment. Works well with most light pen graphics programs.

Micro Illustrator Commodore Business Machines

Disk

\$29.95

Graphics program that uses either joystick or light pen as a controller. Good documentation.



keyboards/ music



Master Composer Access Software

Disk
\$39.95

Enter, edit and arrange up to 127 measures of music. Blocks of music can be arranged into complete scores including skipped and repeated blocks. Sound selection for voices can change every block. Help screens included. Music files can be played without the software.

MAX Synthesizer Sequential Circuits

\$795.00

Six-voice music synthesizer with six-track digital recording capability. Compatible with the 64 through a MIDI interface (not supplied). Includes 79 preset instruments and special effects, and MIDI software.

Melodian Keyboard Melodian

\$199.95

A 40-key portable keyboard with music software that connects directly to the 64. Three voices can be defined and played independently or simultaneously. Includes good documentation and music tutorial.



MIDI Interface Passport Designs

\$129.95

Musical Instrument Digital Interface (MIDI) for connecting the 64 to MIDI keyboards and drum machines. Disks containing "recorded" songs are included.

Music Shop Broderbund

Disk
\$44.95

Program for entering and playing musical scores. Graphic note entry and pull-down menus help in entering notes and setting sound. Full sound screen for creating the sound of each voice. Twelve demonstration songs included. Will work with Passport's MIDI interface.

VOICE

Personal Speech System Votrax

Hardware/disk
\$395.00

Text-to-speech device with sharper, more understandable pronunciation than most others. Type in words (as they are actually spelled or using phonetic spelling) and the 64 will say them.

Voice Command Module Eng Manufacturing, Inc.

Hardware/disk
\$49.95

Voice recognition system that responds to the spoken word. Includes a voice-controlled card file and a voice-controlled game to demonstrate its capabilities. Lets you write your own voice-controlled programs.

Languages

PASCAL 64 Abacus Software

Disk
\$39.95

PASCAL compiler incorporating commands to use the high-resolution graphics, sound, and sprites of the 64. Allows access to machine language programs and interrupt control. Manual includes tutorial, list of references, and 64-specific commands.

PROMAL Systems Management Associates

\$49.95 (shell) or \$99.95 (stand-alone)

New programming language with a new operating system and editor. Variables and procedure names up to 31 characters, single-valued functions and argument passing to procedures. Three manuals with example programs.

JOYSTICKS

Competition Pro 1000

Coin Controls

\$12.95

Light plastic joystick with a rectangular base and a finger ledge under the front of the base. A very precise and accurate joystick with a two-year warranty.

Competition Pro 5000

Coin Controls

\$17.95

Heavy plastic, ball-top joystick with dual fire buttons in front. Base is square and very sturdy. Control is perfect. Two-year warranty.

Joy Board

Coin Controls

\$19.95

Joystick built into a large flat plastic board with dual fire buttons. Use one hand for the joystick and other for the fire buttons. Two-year warranty.

Prostick II

Newport Controls

\$24.95

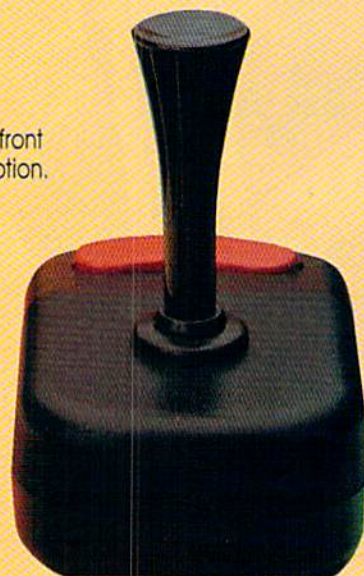
Cool-blue joystick with two fire buttons mounted on the front edge of the case and a 4- or 8-way collar for joystick motion. Very comfortable to use. Five-year warranty.

T.A.C. 2

Suncom

\$12.95

Ball-top joystick with a rounded square base and two fire buttons. Base of stick is supported by a cone in the base. Very smooth action and a two-year warranty.



ARCADE GAMES

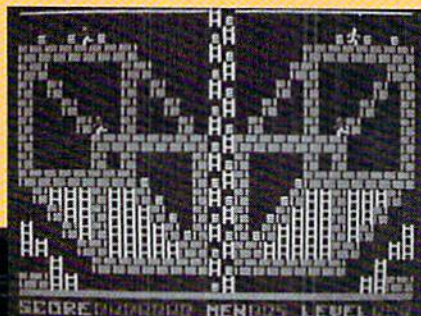
Championship Lode Runner

Broderbund

Disk

\$34.95

Drawing heavily on skills acquired playing *Lode Runner*, this game adds 50 more screens. Extremely challenging.



Ghostbusters

Activision

Disk

\$34.95

Following the theme of the movie, this game offers intense challenge, lots of action, and a battle that combines both heroics and humor.



Beach Head II

Access Software

Disk

\$39.95

Sequel to *Beach Head*. Challenging; excellent graphics.

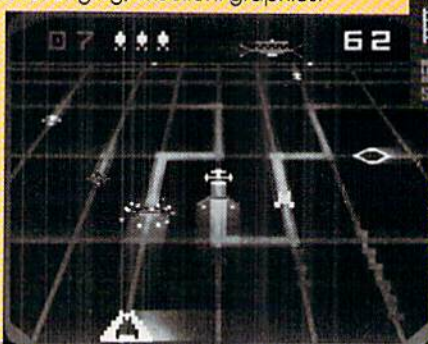
Beamrider

Activision

Disk

\$29.95

Space blast-a-thon. Translation of the video arcade game. Excellent graphics.



Mail Order Monsters
Electronic Arts

Disk
\$29.99
Customize a monster who will go to battle for you. Three levels of difficulty.

Racing Destruction Set
Electronic Arts

Disk
\$34.99
Construct the race of your dreams. Choose your vehicle, design your track. Race conventionally or destructively. Endless variety of combinations.

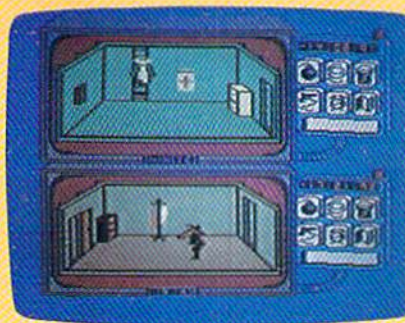
Stealth
Broderbund

Disk
\$29.95
Pilot a bomber-fighter craft over enemy territory. Good sound, color, graphics, animation and challenge.



Spy vs. Spy
First Star Software

Disk
\$29.95
Recreate the MAD magazine conflict. Excellent audio-visual effects.



Wizard
Progressive Peripherals & Software

Disk
\$29.95
Complete as many levels as you can before you run out of wizards. When out of levels to master, create your own. Excellent graphics and sound effects.



Space Taxi
Muse

Disk
\$29.95
You are a cab driver whose territory covers the galaxy. But there are dangers lurking in the alien lands. Nice sound effects.

FOOTBALL

Computer Quarterback
Strategic Simulations

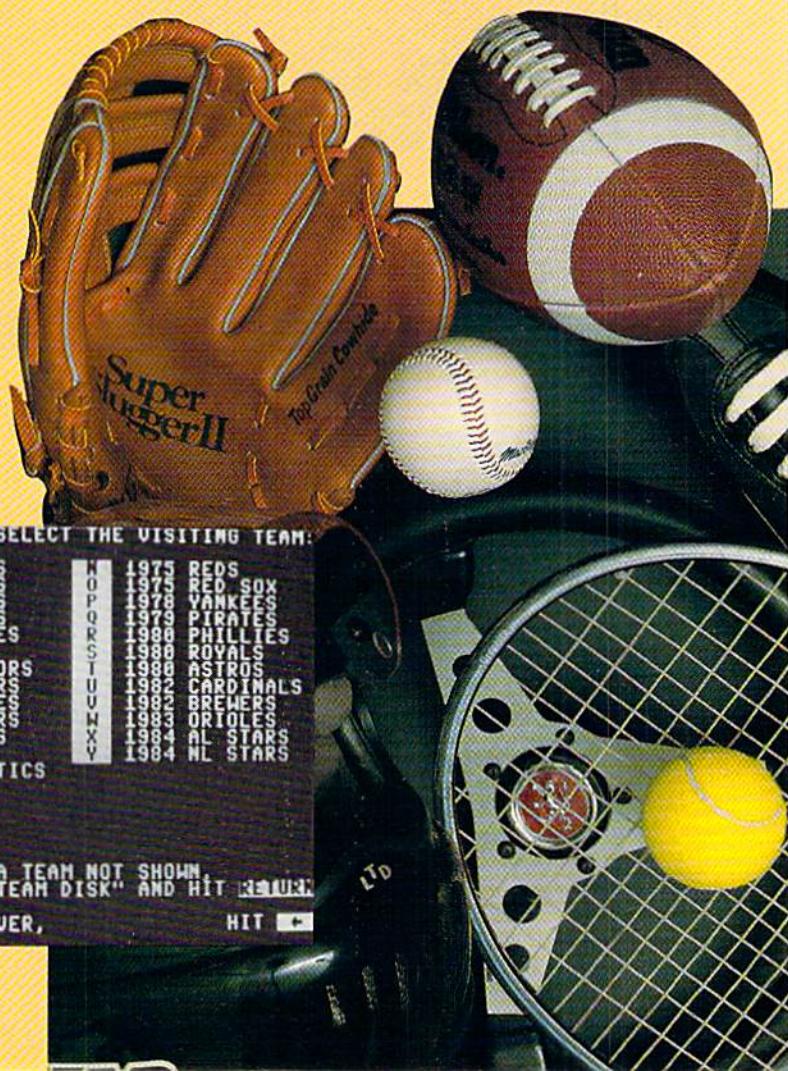
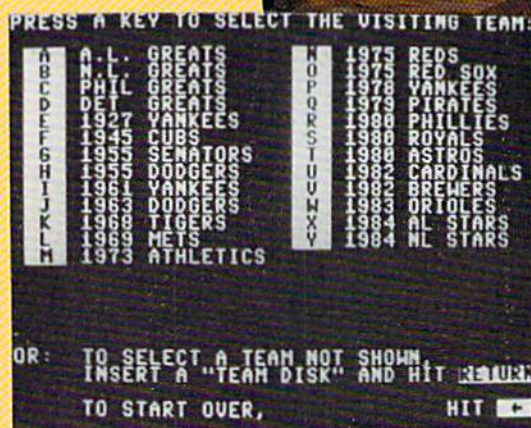
Disk
\$39.95
Statistical football game with choice of using NFL team data or building a team. Offensive and defensive play numbers can be randomized for each player. A printed game film can be created.

International Hockey
Artworx Software

Disk
\$24.95
Sequel to *Slap Shot Hockey*. Now you can play against the computer. Penalty shots allowed.

MicroLeague Baseball
MicroLeague Sports

Disk
\$39.95
Statistical baseball simulation with a bit of managing. Full team and player selection available from all-time great teams. Full graphics supplement statistics.



Disk

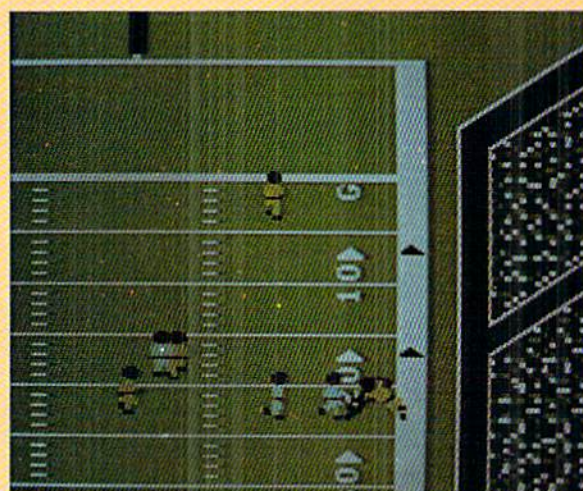
\$29.95

Full-graphic tennis game. Action controlled by joystick. One or two players allowed. Options include four playing styles, three court surfaces, and three different game lengths.

Disk

\$29.95

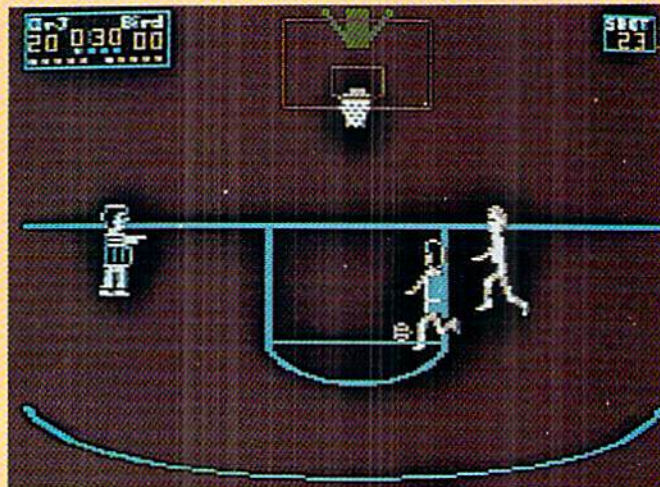
Joystick-controlled football game for one or two players. Passes, runs, punts, field goals and runbacks are possible. Screen scrolls in four directions to continuously display the active portion of the field.



Disk

\$32.95

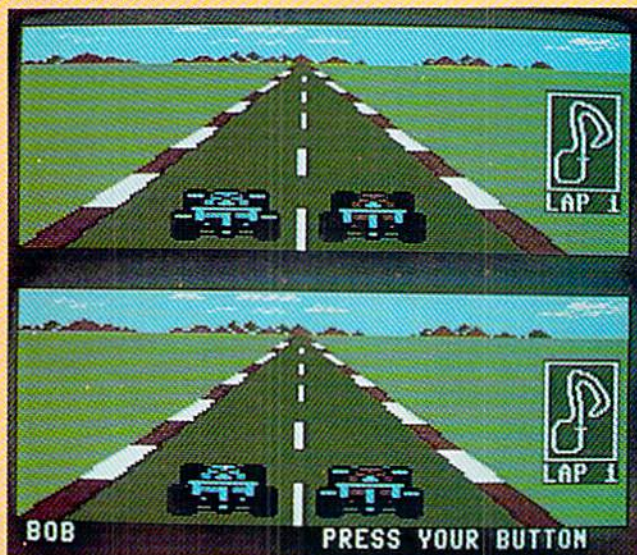
One- or two-player action basketball game. Joystick control of Larry Bird and Julius Erving allows steals, shots, rebounds and penalties. Options include the level of play, length of quarters, and first to reach a score.



Disk

Price not available.

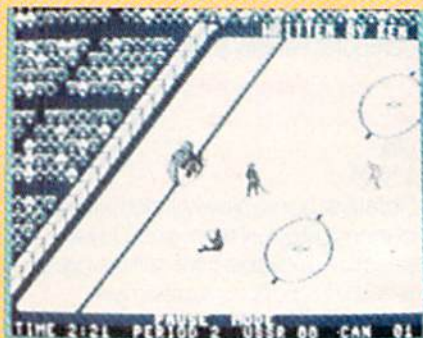
Split-screen one-or two-player racing game. First player to finish line wins. Pitstops are required because of fuel consumption and tire wear. Options include level of play, course, and the number of laps.



Disk

\$19.95

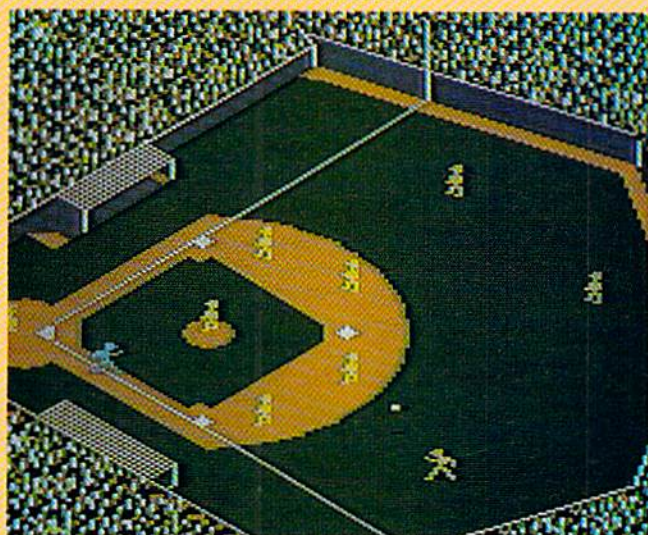
A two-player ice hockey game. Joystick controls goal tending, stickhandling, shooting, and player motion. Extra features include speech synthesis, penalties, and faceoffs.



Rally Speedway
Commodore Business Machines

Disk
\$29.95

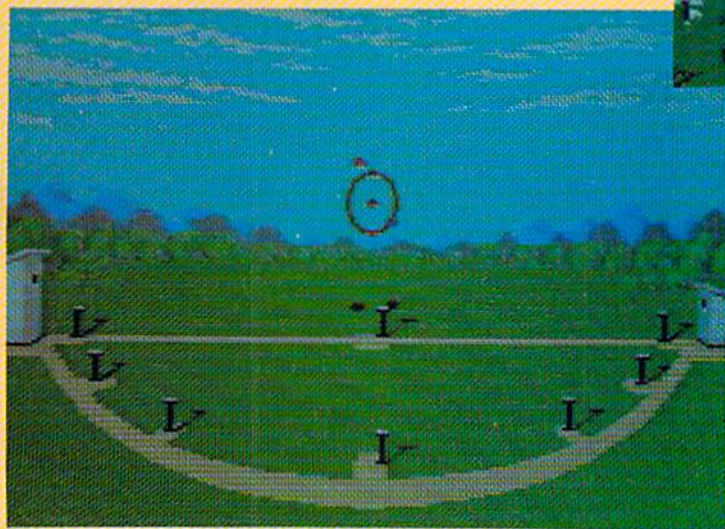
A bird's eye-view one-or two-player racing game. Penalty system keeps both players on screen. Player with best time wins. Options include road conditions, top speed, acceleration, and track. Full track construction kit included.



Star League Baseball
Gamestar

Disk
\$29.95

A joystick-controlled baseball game for one or two players. Steals, bunts, double plays, and pick-offs allowed. Fielders who must make a play are automatically activated.



Summer Games I
Epyx

Disk

Price not available

Combination of eight Summer Olympic events. One to eight players. Great graphics. Events include diving, pole vault, skeet shooting, swimming, and running.

Summer Games II
Epyx

Disk

Price not available

New set of eight Summer Olympic events. Up to eight players. All events from Summer Games I can be incorporated into the game. Events include equestrian, cycling, fencing, javelin, high jump, and rowing.



World's Greatest Baseball Game
Epyx

Disk

Price not available

Joystick-controlled statistical baseball game for one or two players. Full team selection before the game. Full statistical game is included on the flip-side of the disk.

BRAIN GAMES

Dragonworld Spinnaker

Disk
\$32.95
Text adventure that picks up where the novel left off. Unique three-panel display. Clues for the befuddled included.

Hacker Activision

Disk
\$29.95
Simulated computer malfunction results in an accidental break-in into a private computer system. No rules or clues.

Hitchhiker's Guide to the Galaxy Infocom

Disk
\$39.95
Comical text adventure based on the novel. You are wacky Arthur Dent, wandering around the galaxy after the earth's destruction.

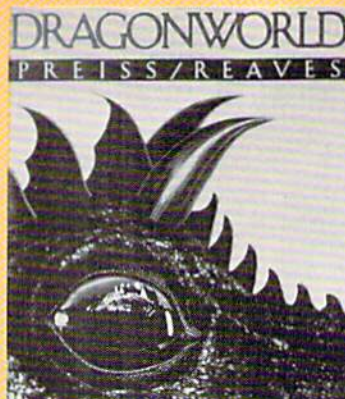


Mindshadow Activision

Disk
\$24.95
Solve the mystery of who you are and why you are stranded on a desert island in this text adventure game. Hint booklet available.

Mindwheel Synapse/Broderbund

Disk
\$39.95
Enter into the minds of four people as you try to save the world from destruction. Text adventure.



PQ-Party Game Suncom

Disk
\$45.95
Crowd-pleasing trivia game. Supplemental disks available, includes four controllers. Extremely fast-paced.

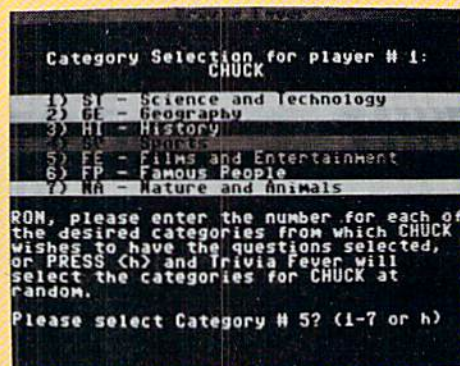
Sorcerer Infocom

Disk
\$34.95
Text adventure game sequel to *Enchanter*. However, you are expected to be stronger, quicker and smarter. Challenging.



Trivia Fever Professional Software

Disk
\$39.95
Versatile trivia game that can be played with or without the computer. Endless combinations and variations. One of the best.



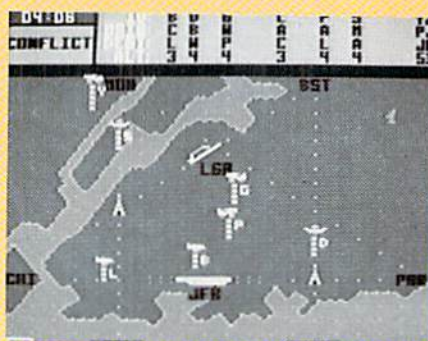
SIMULATIONS

Flight Simulator II Sublogic Corporation

Disk
\$49.95
Pilot a Piper 181 Cherokee Archer from New York to Los Angeles. Includes a World War I aerial battle game.

Kennedy Approach MicroProse

Disk
\$34.95
You are an air traffic controller in some of the busiest airports in the country. Monitor flights and bring planes in for landings. Realistic sound.



BOOKS/TUTORIALS

At Home with BASIC by Henry Mullish and Dov Kruger Simon & Schuster

\$12.95
Book: See review in this issue.

Can I Play with the Computer, Too?

by Bernard Falkoff
Banbury Books
\$19.95
Book/disk combination for pre-schoolers. Focuses on developing school readiness skills while it teaches computer literacy. Parent participation necessary. Parent guide provided with each chapter.

The Commodore 64 Family Helper
by Richard F. Daley and Sally J. Daley
Scott Foresman & Co.
\$19.95

Book/disk combination with five home applications: Memo Calendar, Checkbook Manager, MiniScribe, Data Manager, and Backgammon. MiniScribe word processor alone is worth the cost of the package.

Commodore 64 Training Tape

Hosted by Jim Butterfield

PF Communications

2727 N. Grove Industrial Drive #101
Fresno, CA 93727

Video tape: A two-hour introduction to computing, divided into 14 sessions. Commodore expert Jim Butterfield discusses applications and capabilities, but does not teach programming.

Commodore 64 Troubleshooting and Repair Guide

by Robert C. Brenner

Howard W. Sams

\$18.95

Book: See review in this issue.

The Computer Phone Book Online Guide

by Mike Cane

New American Library

\$9.95

Book: What telecommunications involves, how to set up your telecommunications terminal, how to use various networks.

The Computer Primer

by Ann Cavanaugh

Trillium

\$12.95

Book: Guide for beginners. Includes a history of computers, explanations of computer terminology, how computers work, introductory programming in BASIC, and glossary.

How to Get the Most out of CompuServe

by Charles Bowen & David Peyton

Bantam Books

\$14.95

Book: A how-to handbook for telecommunications novices. Explains the many facets of CompuServe and details money-saving shortcuts for getting around the network more easily.

Learning Commodore 64 LOGO Together

by Kenneth Goldberg

Microsoft Press

Price not available.

Book: A LOGO classic, easily adapted to classroom use. Introductory to intermediate programming levels.

Machine Language for the Commodore 64 and Other Commodore Computers

by Jim Butterfield

Brady Communications

\$12.95

Book: Based on the machine language course Commodore expert Jim Butterfield has been giving all over the world; this one is for intermediate to advanced programmers. Very clear and easy to follow. Includes many short programming examples.

Using the Commodore 64

by Len Lyons with Joe Campbell and Herb Moore

Addison-Wesley

\$14.95

Book: A step-by-step guide to the keyboard, disk drive, dataseite and printer. Some introductory programming. Explanations of how to use special applications software like word processors and telecommunications.

FAST LOADERS

Fast Load

Epyx

Cartridge

\$39.95

Speeds up loading of all types of software for Commodore's 1541 disk drive. Also contains a DOS wedge and copy programs.



Kwik-Load!

Datamost

Disk

\$19.95

Speeds up loading of unprotected software on the Commodore 1541 disk drive by about 300%. Some protected software will not load. Disk also contains a quick copy program.



Mach 5

Access Software

Cartridge/disk

\$34.95

Easy-to-use fast loader in cartridge form for the 1541 disk drive. Disk includes a program that frees an additional 4K bytes of BASIC for use and a disk organizer program.



Utilities

Commodore Assembler Development System

Commodore Business Machines

Disk

\$49.95

Editor/assembler package with a monitor and a cross reference program. The editor allows you to use the full-screen editor of the 64. The macro capability of the assembler adds a very powerful feature.

IEA: Instant Editor Assembler

Aquarian Software

Disk

\$17.95

Full-featured editor/assembler package with a monitor and a single-step feature. The entire package can reside in memory, making it fast and easy to use. Disk contains many nicely documented example programs.

Speedwriter

Codewriter Corporation

Disk

\$50.00

BASIC compiler which creates a new, faster (up to 55 times) version of the program compiled. Will compile most programs without modifications. Comes with a very good manual.

HARDWARE

Modem/300

Commodore Business Machines

\$119.95

A 300-baud auto-answer/auto-dial modem with a built-in speaker. Plugs directly into the user port and works with both rotary and Touch Tone phones. Terminal software with upload/download capabilities is included on disk.



MPP-1064

Microbits Peripheral Products

\$99.95

A 300-baud auto-answer modem that comes with its own power supply. Three LED's display power on/off, off-hook and carrier-detect status. VIP terminal software on disk is included.

MVP Interface

Allen Communication

Price not available.

Device that connects your Commodore 64 to a laserdisc player.

1541 Flash!

Skyles Electric Works

\$59.95

Hardware that increases the speed of data access between the 64 and the 1541 disk drive. Completely compatible with all 64 software. Doesn't use any memory of the 64.

Super Box 64

Handic Software

\$149.95

Combination of a three-slot expansion card, an IEEE-488 interface, and a reset switch. Switch allows selection of any of the three cartridge slots. No memory of the 64 is used.

Toshiba P351

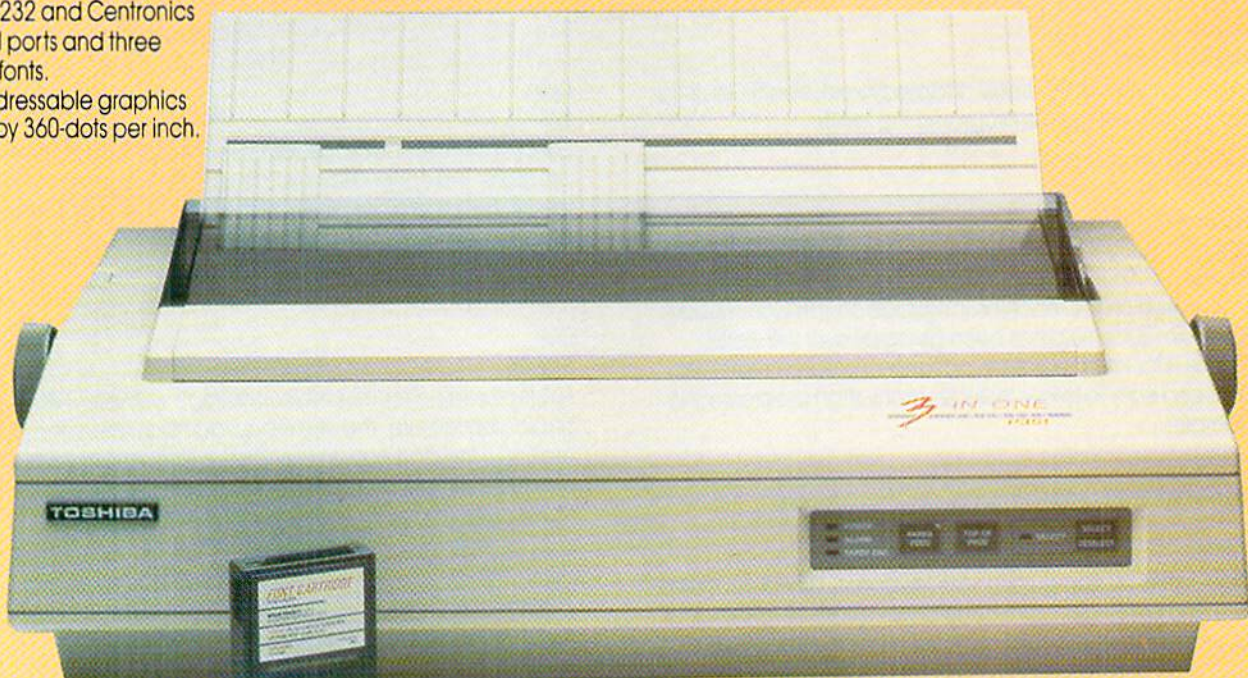
Toshiba America, Inc.

Information Systems Division

\$1895

One of the fastest dot matrix printers around (288 characters/second in draft mode) with a 100 cps letter-quality mode. Has both RS232 and Centronics parallel ports and three built-in fonts.

Dot-addressable graphics to 180-by 360-dots per inch.



Hush 80

Ergo Systems, Inc.

\$149

An 80-column, dot matrix, thermal printer. Direct serial connect to the Commodore 64 and 128. Very quiet. A good quality thermal paper is available directly from the manufacturer.



Elite 5 CD

Axiom Corporation

\$289

A daisy-wheel printer with both a direct-connect serial cable and a Centronics parallel port. Print speed is 10 cps. Secondary addresses are used to select special modes such as control characters printed as mnemonics. Ninety-day "no hassle" warranty.

It doesn't take much to make your programs run up to 20 times faster.

If you've been writing programs for your Commodore 64, Apple IIe or Apple IIc in BASIC you can take a giant step forward in speed of execution and in programming productivity for just \$49.95.

You can get program performance that you only thought possible from machine language programs. While still using a powerful, understandable high-level language. A language that's similar to Pascal, but much easier to learn and use.

You can create programs with our advanced, full-screen editor—much like you would on a word processor, and it even locates your compilation errors.

And when you compile your programs, you have a fast one-pass compiler, a recursive descent compiler that can compile a 100-line source program in 10 seconds or less.

PROMAL™ also gives you an elegant operating system "Executive," which includes powerful file, program and memory management commands and even I/O redirection.

You get all of that with PROMAL—improved programming productivity, faster compile and run time and power that you may never have thought possible.

PROMAL—for the beginning or advanced programmer.

Whether you are just beginning to write or are an experienced programmer, you can be more productive with PROMAL (PROgrammer's Micro Application Language). It's easier to learn than Pascal, C or Forth. It provides you with a full range of powerful structured statements like IF-ELSE, WHILE, REPEAT, FOR and CHOOSE. And, because indentation is part of the language's syntax, it helps you write programs neatly and logically. There are no line numbers to worry about, and since comments don't take up memory space, you can document your programs completely.

COMMODORE 64 BENCHMARK

(Sieve of Eratosthenes)

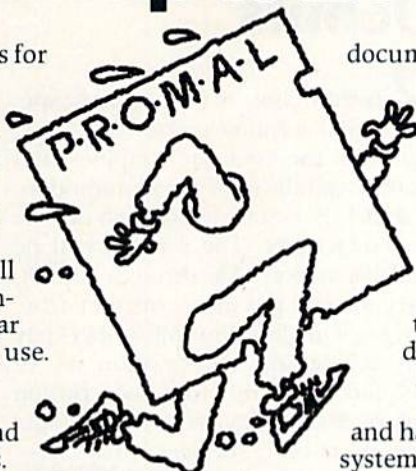
	PROMAL	BASIC	COMAL	FORTH	PASCAL
Execution Time (secs.)	30	630	490	51	55
Object Code Size (bytes)	128	255	329	181	415
Program Load Time (secs.)	3.2	3.8	6.3	11.2	23.5
Compile Time (secs.)	8.5	—	—	3.9	108

PROMAL—a language especially for small systems.

Unlike languages developed for larger systems and squeezed into small systems environments, PROMAL was conceived and developed specifically for the small system. With PROMAL there's finally a language created for the environment in which you work.

Speed up your programs and step up your programming productivity.

You get all of that speed and productivity—with the PROMAL PM-200 "End-User" system (220 pages of



\$49.95 to be exact.

documentation and PROMAL system diskette including sample programs) for just \$49.95. There's a 15-day, no-risk moneyback guarantee. And the entire \$49.95 may be credited against later purchase of the "Developer's Version."

The "Developer's Version"—all the components of the "End User" system plus the "run time" object module generation capability, additional documentation and an unlimited right to sell or distribute PROMAL applications—is only \$99.95.

Or—for only \$10.00 plus \$2.50 postage and handling you can get the PM-100 demo system. It includes a 32-page manual and all the

capabilities of the PM-200 except the ability to print or save

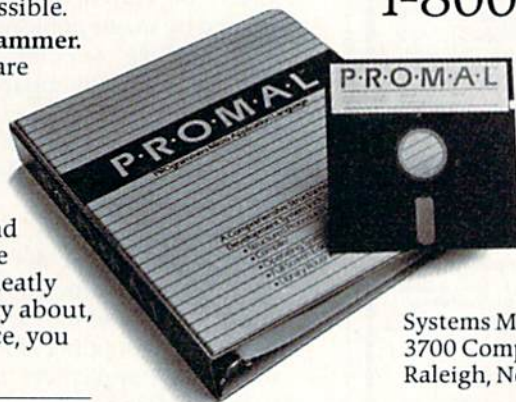
files to disk. It's a very inexpensive way to explore the wonders of PROMAL.

Our Guarantee: Try PROMAL for 15 days. If you are not completely satisfied, return it to us undamaged and we'll refund your money. No questions asked. Dealer inquiries invited.

For quicker response on credit card orders, call Toll Free:

1-800-762-7874

In NC: 919-787-7703.



Systems Management Associates
3700 Computer Drive, Dept. CMP
Raleigh, North Carolina 27609

Order Form

Please send me my copy of PROMAL.

My system is (check one): ☐ Commodore 64 ☐ Apple IIe ☐ Apple IIc
PROMAL Package Desired (check one):

- ☐ PM-200 (for systems listed above) \$49.95 plus \$5.00 for shipping and handling at a total cost of \$54.95. Satisfaction Guaranteed.
- ☐ PM-300 Developer's Version \$99.95 plus \$5.00 for shipping and handling for a total cost of \$104.95. Satisfaction Guaranteed.
- ☐ PM-100 demo diskette \$10.00 for the diskette plus \$2.50 for postage and handling for a total cost of \$12.50. (Non-refundable.)
- ☐ My check is enclosed. ☐ Please charge my purchase to my ☐ Visa ☐ Mastercard

Card Number

Expiration Date

Signature

Name

Address

City, State, Zip

North Carolina Residents add 4-1/2% sales tax.

Foreign orders add \$15.00 additional shipping and handling.

MUST LIQUIDATE Commodore Compatible Total Telecommunications™ MODEM



90-Day
Limited
Factory
Warranty!

FCC
Approved

- Access the stock market, take college classes, do your shopping, and a whole lot more!
- For Commodore 64K or SX64!
- Has modular jacks for quick, easy hookup to your phone system!
- Works on TouchTone® and Rotary (Pulse) dialing system (not PBX)!

Liquidation due to an overstock! This single communications package connects your Commodore 64K or SX64 for on-line telephone use. No special computer knowledge is required. Super-intelligent software is completely menu-driven!

Features: 30K software buffer. 300 Baud, auto dial, auto answer helps eliminate complex modem steps. Works on Tone and Rotary phone systems (not on PBX). Upload and download of text, programs, data files. Prints or stores downloaded files. Captures and displays high resolution, mapped graphics files. Color selection menu. Connect-time clock keeps track of log-on time. ASCII or Commodore characters. Smooth screen rolling. Includes 6-ft. modular phone cord. **Equipment needed:** C64, Monitor, and disk drive or SX64.

NOTE: Price includes trial subscription to over 52 data base services for vast information. Initial sign-up fee is FREE. All you pay is the on-line time you use, plus monthly rate.

Mfr. List: \$109.95

Liquidation
Priced At

\$44

Item H-751-63646-00 Ship, handling: \$4.00

Price subject to change after 60 days. Sales outside continental U.S. are subject to special conditions. Please call or write to inquire.

Credit card customers can order by phone,
24 hours a day,
7 days a week



Toll-Free: 1-800-328-0609



Your check is welcome!
No delays in orders paid by check.

C.O.M.B. CO.® Item H-751-63646-00
14605 28th Ave. N./Minneapolis, MN 55441-3397

Send ____ Modem(s) at \$44 each, plus \$4.00 each for shipping, handling. (Minnesota residents add 6% sales tax. Allow 3-4 weeks delivery. Sorry, no C.O.D. orders.)

☐ My check or money order is enclosed. (No delays in processing orders paid by check, thanks to TeleCheck.)
Charge: ☐ MasterCard® ☐ VISA

Acct. No. _____ Exp. _____

PLEASE PRINT CLEARLY

Name _____

Address _____

City _____

State _____ ZIP _____

Phone _____

Sign here _____

C.O.M.B. CO.®
Authorized Liquidator

14605 28TH AVENUE NORTH
MINNEAPOLIS, MINNESOTA 55441-3397

TELECOMMUNICATIONS

BY HOWARD MILLMAN

QuantumLink Debuts

QuantumLink, a Commodore-specific telecommunications data base that uses the first-rate graphics and sound capabilities of the Commodore 64 and 128, is scheduled to go on-line in mid-October. The service will be available nationwide through Uninet. Instead of paying connect-time charges, QuantumLink subscribers pay only a one-time subscription fee of \$25 and a flat monthly subscription cost of \$9.95. Except for some specific extra-cost services, that's it—there are no connect-time charges. The \$9.95, incidentally, is for both 300- and 1200-baud modems.

As I write this, the final shape and form of QuantumLink is still being refined. There may be some further enhancements in the final version. The service is tentatively slated to include:

- Previews (and ultimately perhaps outright purchase via downloads) of commercial software offered by major publishers.
- Commodore Special Interest Groups, bulletin boards, and Helpline.
- Electronic mail, general interest bulletin boards, and real-time on-line "chatting."
- Leisure-time pursuits, including games (with full color graphics and sound), Rocknet Music News, trivia, and movie reviews.
- Keyboard shopping for everything from appliances to books to travel arrangements.
- A special innovative learning center dedicated to using computers as educational aides, including a full encyclopedia, tests and quizzes, as well as educational software reviews.
- News of the day.
- Financial services, including banking and investment services.

The best news may be that QuantumLink is Commodore-specific. What does this mean to you? Very simply—now, instead of just settling for reading text scrolling silently on the screen (maybe accompanied by simplistic graphics), you can access an on-line data base that harnesses the

With QuantumLink, you can access an on-line data base that harnesses the full range of Commodore's sound and graphics features.

full range of Commodore's impressive sound and graphics features.

One particularly appealing aspect promises to be the software preview and (perhaps eventually) purchase options. A long-standing gripe of computer users—and one with merit—is dissatisfaction with software purchases made on the basis of package or advertising hype alone. Sometimes, after using the program, purchasers realize it's not what they expected. I've long maintained this is a primary cause of software piracy. Well, this "Try it. If you like it, buy it," approach may be an answer.

The initial cost for QuantumLink is ordinarily a \$25.00 subscription fee. That buys a password, account number, and the dedicated disk-based communications software you'll need to access the data base. This one-time fee will be waived for purchasers of certain Commodore-compatible modems, including the 1660 and 1670.

But what if you already own a modem? Quantum has offered to waive that \$25.00 fee for 5,000 readers of *Commodore Microcomputers* and *Commodore Power/Play*. To take advantage of this limited introductory offer, call 800-833-9400 on-line (with your modem) to register. It's that simple! Remember though, this is a limited offer.

With an on-line data base as promising and innovative as QuantumLink, we'll be covering it in greater detail in future issues. Interested? Read more about it in upcoming articles, or, by joining now, you can tour with us as we explore and map this new terrain.

Quantum Computer Service
8620 Westwood Center Drive
Vienna, Virginia 22180
800-392-8200



How to Connect a Modem/300 or Modem/1200

After unpacking and inspecting your modem, locate the two square telephone jack receptacles, (they are marked "line" and "phone" on the Modem/300.) On the Modem/300, also locate the single round coax receptacle marked "audio in" and the answer/originate slide switch (designated "A" and "O" on the case). Included in the modem box is a six-foot telephone cable. The Modem/300 also includes two special audio cables; set these aside for now.

Connecting the Telephone Lines

Remove your telephone's connector from the wall outlet. If it is a modern modular connector, like those used on the six-foot telephone cable provided with your modem, you can do this by pressing on the connector's plastic locking tab. If it is different from the cable's connectors, you will need to obtain a low-cost adaptor, available at most electronic and specialty stores, to connect the modem cable's modular plug to your wall outlet.

Plug one end of the six-foot telephone cable into the modem's "line" receptacle. Plug the other end into your telephone's wall receptacle, using an adaptor if required. If you would like to leave your Commodore modem connected to the telephone line, you may plug your telephone's modular plug into the receptacle marked "phone" on your modem; when your modem is not in use, your telephone will operate normally.

If you are using a Commodore Modem/1200, you may skip the next step and go directly to Installing the Modem.

Connecting the Audio Cable

To use the tone-dialing feature of the Modem/300, the audio output of your Commodore computer must be



connected to the "audio in" receptacle of the modem. Follow the instructions below which describe your installation. (The Modem/1200 does not require this connection to provide tone-dialing.)

A. If you are using a television with your Commodore computer: Locate the short audio cables included with your Modem/300. One of these has a large connector on one end with five pins, known as a "DIN plug," and a connector known as an "RCA plug" on the other end. Insert the larger DIN connector into the audio/video receptacle on the back panel of the computer. This receptacle is located next to the computer's serial port, used for disk drives and printers, and is similar in appearance. Insert the RCA plug, on the other end of the cable, in the "audio in" receptacle of the Modem/300. Set the other audio cable aside; you will not need it to use your modem.

B. If you are using a monitor with your Commodore computer: The audio signal from your computer is included in the cable used to connect your video monitor to the computer. Locate the two audio cables included with your Modem/300. One of these, known as a "Y-adaptor," has three connectors: a male "RCA plug," and, at the other end, two female "RCA jacks." Set the other audio cable aside; it will not be used. You will also need a "coax" cable, not included with your Modem/300, with a male RCA

plug on each end. These are available at most electronic and specialty stores in various lengths; a three-foot cable is usually sufficient.


Unplug the audio connector at the end of your monitor cable from the monitor's audio port. Plug the male RCA plug of the Y-adaptor into the monitor's audio port, and the monitor cable's audio connector into either one of the Y-adaptor's female RCA jacks. Now plug one end of the "coax" cable into the remaining RCA jack of the Y-adaptor, and the other end into the "audio in" receptacle of the Modem/300.

Installing the Modem

If you are using a Modem/300, move the answer/originate slide switch to the "O" position.

Make sure that your computer is turned off. Locate the computer's user port; when facing the front of the computer, this is located on the left-hand side of the computer's back panel. Insert the modem carefully into the user port, making sure that the computer's edge connector and the modem connector are properly aligned.

Turn on your monitor or television, disk drive (or cassette), and the computer. Your modem is powered by the computer itself. Now load your telecommunications software, and follow the instructions included with it for operating your Commodore Modem/300 or Modem/1200. **C**



SOME HISTORIC BREAKTHROUGHS DON'T TAKE AS MUCH EXPLAINING AS COMPUSEVE.

But then, some historic breakthroughs could only take you from the cave to the tar pits and back again.

CompuServe, on the other hand, makes a considerably more civilized contribution to your life.

It turns that marvel of the 20th century, the personal computer, into something useful.

Unlike most personal computer products you read about, CompuServe is an information service. It isn't software. It isn't hardware. And you don't even have to know a thing about programming to use it. You subscribe to CompuServe—and 24 hours a day, 7 days a week, it puts a universe of information, entertainment and communications right at your fingertips.

A few of the hundreds of things you can do with CompuServe.

COMMUNICATE

EasyPlex™ Electronic Mail lets even beginners compose, edit, send and file messages the first time they get online. It puts friends, relatives and

business associates—anywhere in the country—in constant, convenient touch.

CB Simulator features 72 channels for “talking” with thousands of other enthusiastic subscribers throughout the country and Canada. The chatter is frequently hilarious, the “handles” unforgettable, and the friendships hard and fast.

More than 100 Forums welcome your participation in “discussions” on all sorts of topics. There are Forums for computer owners, gourmet cooks, veterinarians, pilots, golfers, musicians, you name it! Also, Electronic Conferencing lets businesses put heads together without anyone having to leave the shop.

Bulletin Boards let you “post” messages where thousands will see them. You can use our National Bulletin Board or the specialized Bulletin Boards found in just about every Forum.

HAVE FUN

Our full range of games includes “You Gussed It!”, the first online TV-style game show you play for real prizes; and MegaWars III, offering the

ultimate in interactive excitement. And there are board, parlor, sports and educational games to play alone or against other subscribers throughout the country.

Movie Reviews keep that big night at the movies from being a five star mistake.

SHOP

THE ELECTRONIC MALL™ gives you convenient, 24-hour-a-day, 7-day-a-week shopping for name brand goods and services at discount prices from nationally known stores and businesses.

SAVE ON TRIPS

Travelshopper™ lets you scan flight availabilities (on virtually any airline—worldwide), find airfare bargains and order tickets right on your computer.



Worldwide Exchange sets you up with the perfect yacht, condo, villa, or whatever it takes to make your next vacation a vacation.

A to Z Travel/News Service provides the latest travel news plus complete information on over 20,000 hotels worldwide.



MAKE PHI BETA KAPPA

Grolier's Academic American Encyclopedia's Electronic Edition delivers a complete set of encyclopedias right to your living room just in time for today's homework. It's continuously updated ... and doesn't take an inch of extra shelf space.



The College Board, operated by the College Entrance Examination Board, gives tips on preparing for the SAT, choosing a college and getting financial aid.

KEEP HEALTHY

Healthnet will never replace a real, live doctor—but it is an excellent and readily available source of health and medical information for the public.

Human Sexuality gives the civilization that put a man on the moon an intelligent alternative to the daily "Advice to the Lovelorn" columns. Hundreds turn to it for real answers.

BE INFORMED

All the latest news is at your fingertips. Sources include the AP news wire (covering all 50 states plus national news), the Washington Post, USA TODAY Update, specialized business and trade publications and more. You can find out instantly what Congress did yesterday; who finally won the game; and what's happening back in Oskaloosa with the touch of a button. And our electronic clipping service lets you tell us what to watch for. We'll electronically find, clip and file news for you...to read whenever you'd like.



INVEST WISELY

Comprehensive investment help just might tell you more about the stock you're looking at than the company's Chairman of the Board knows. (Don't know who he is? Chances are, we can fill you in on that, too.) CompuServe gives you complete statistics on over 10,000 NYSE, AMEX and OTC securities. Historic trading statistics on over 50,000



stocks, bonds, funds, issues and options. Five years of daily commodity quotes. Standard & Poor's Value Line. And more than a dozen other investment tools.

Site II facilitates business decisions by providing you with demographic and sales potential information by state, county and zip code for the entire country.

National and Canadian business wires provide continuously updated news and press releases on hundreds of companies worldwide.

GET SPECIALIZED INFORMATION

Pilots get personalized flight plans, weather briefings, weather and radar maps, newsletters, etc.

Entrepreneurs use CompuServe too for complete step-by-step guidelines on how to incorporate the IBMs of tomorrow.

Lawyers, doctors, engineers, military veterans and businessmen of all types use similar specialized CompuServe resources pertinent to their unique needs.

And now for the pleasant surprise.

Although CompuServe makes the most of any computer, it's a remarkable value. With CompuServe, you get low start-up costs, low usage charges and local phone-call access in most major metropolitan areas.

Here's exactly how to use CompuServe.

First, relax.

There are no advanced computer skills required.

In fact, if you know how to buy breakfast, you already have the know-how you'll need to access any subject



in our system. That's because it's "menu-driven," so beginners can simply read the menus (lists of options) that appear on their screens and then type in their selections.

Experts can skip the menus and just type in "GO" followed by the abbreviation for whatever topic they're after.

In case you ever get lost or confused, just type in "H" for help, and we'll immediately cut in with instructions that should save the day.

Besides, you can either ask questions online through our Feedback service or phone our Customer Service Department.

How to subscribe.

To access CompuServe, you'll need a CompuServe Subscription Kit, a computer, a modem to connect your computer to your phone, and in some cases, easy-to-use communications software. (Check the information that comes with your modem.)

With your Subscription Kit, you'll receive:

- a \$25 usage credit.
- a complete hardcover Users Guide.
- your own exclusive user ID number and preliminary password.
- a subscription to CompuServe's monthly magazine, *Online Today*.

Call **800-848-8199** (in Ohio, 614-457-0802) to order your Subscription Kit or to receive more information. Or mail this coupon.

Kits are also available in computer stores, electronic equipment outlets and household catalogs. You can also subscribe with materials you'll find packed right in with many computers and modems sold today.



☐ Please send me additional information.
☐ Please send me a CompuServe Subscription Kit.
☐ I am enclosing my check for \$39.95, plus \$2.50 handling. (Add sales tax if delivered in Ohio.)
Please make check payable to CompuServe Information Services, Inc.
☐ Charge this to my VISA/MasterCard

Expiration Date _____
Signature _____
Name _____
Address _____
City _____
State _____ Zip _____

MAIL TO:

CompuServe®

Customer Service Ordering Dept.
P.O. Box L-477
Columbus, Ohio 43260

An H&R Block Company
EasyPlex and ELECTRONIC MALL are trademarks of CompuServe, Incorporated. Travelshopper is a service mark of TWA.

Reset Master

Computer: VIC 20, Commodore 64, SX-64

Publisher: Master Software
6 Hillery Court
Randallstown, MD
21133

Medium: Hardware reset module/
serial port extender/
program recovery system

Price: \$24.95

Up to now, the only way to regain control of your computer after a crash was to shut it off, then turn it back on again. And in doing so, everything in memory was lost. And if you didn't save the program prior to running it, you had to key it in all over again from scratch. All this because there's nothing you can do to recover a program from a lockup, right? Wrong! You can get yourself a Reset Master from Master Software, plug it in, run the "Renew" program and be protected from fatal crashes.

A listing for several versions of a program called "Renew" is supplied with the Reset Master module (versions for an unexpanded VIC, a 3K expanded VIC, an 8-24K expanded VIC and an SX-64 or 64 are included). No matter which version(s) you need, the programs are very short, so keying them in is no big deal. The program should be saved to disk or cassette before you do anything further. This "Renew" program is used in conjunction with the Reset Master. Together they allow you to recover a program from a fatal crash.

The Reset Master also permits you to have two printers with different device numbers connected at the same time, since it provides you with an extra serial port. The module has a two-foot cable attached to it, so it acts as a serial port extension cord, as well. The extra length allows you to move your printer further away from the keyboard or it can be used to keep the disk drive and printer on opposite sides of the computer.

Physically, the Reset Master consists of a blue plastic box with a red momentary-contact switch mounted on its top. A two-foot cable extends from the side of the box with a DIN plug on



*Before Reset Master,
your only way to re-
gain control of the
computer after a
crash was to shut it
off, then turn it back
on again.*

the end. This plug inserts into the extra serial port on your disk drive. The front of the Reset Master box has two serial-port jacks mounted on it. Your printer plugs in to either of these ports, and you have an extra serial port available to boot! This extra port can be used to keep a second printer set to a different device number "on-line" at all times, negating the need to swap cables. Since I use both a daisy-wheel printer and a dot-matrix unit in the course of my work, this feature is very handy to have. I keep the dot-matrix printer set to device number four while the letter-quality job is set for device number five. Either one can be activated by specifying the desired device number from the software. Disconnecting one and plugging in the other is a nightmare that the Reset Master has banished forever.

Since it was originally released, the 64 has undergone several subtle engineering improvements that have dealt mainly with internal changes to the circuitry. These changes do affect the Reset Master to some degree. Not to worry, though, since Master Software has taken all of that into consideration and provided a means of getting around the problem.

On the right side of the unit are two screws with a short wrap of light wire around one of them. If you have one of the early 64's, you might have to access these screws. All that's required is extending the "jumper" wire from one screw to the other and retightening them (no soldering is involved). The instruction sheet tells how to do this explicitly, and diagrams are provided. Most models of the 64 won't need this slight modification. (For you technically curious readers, jumping these two screws with the wire simply connects a resistor into the circuitry.)

In actual practice, here's how the Reset Master and "Renew" programs work. Assuming you've loaded (or typed) in the "Renew" program, you then run it. A screen message informs you, "TO RENEW, TYPE: SYS 50000:CLR" and the READY prompt appears beneath it. (50000 is the starting address of the ML RENEW program for the C-64 or SX-64; this number will be different for the various VIC versions.)

Continued on Pg. 122

Commodore 64 GRAPHICS CONTEST

Create gorgeous graphics on your Commodore 64 using your favorite graphics package or programming aid—and maybe YOU will be our grand prize winner. Winners will receive a cash prize and the winning graphics screens will be published in an upcoming issue of Commodore Power/Play.

Carefully read the rules below. Then fill out the official entry blank and submit it with your best graphics screens on disk to:
Commodore Power/Play, 1200 Wilson Drive, West Chester, PA 19380, ATTN: GRAPHICS CONTEST.

DEADLINE FOR ENTRY: JANUARY 31, 1986 MAXIMUM 2 SCREENS PER CONTESTANT

RULES: Commodore 64 Computer Graphics Contest

1. You will be judged on originality, creativity and best use of the Commodore 64's unique graphics features.
2. A maximum of two screens per person is allowed. If a contestant submits more than two screens for consideration, all of that person's entries will be invalidated.
3. All entries must be submitted on disk, 1541 format, with the following information marked clearly on the disk's label:
 - a. Contestant's name, address and phone number
 - b. Picture title(s)
 - c. Graphics package or programming aid used to create the graphics
 - d. The words "GRAPHICS CONTEST"
4. Make sure your mailer will protect your disk from damage. Affix sufficient first-class postage. Mail your disk and the official entry blank to the address shown above in time to reach us by the January 31, 1986 deadline.

GENERAL CONDITIONS

Contest is open to any U.S. resident except employees of Commodore Business Machines, Inc., Commodore Elec-

tronics Ltd., Commodore International Ltd., their advertising and promotional agencies and their immediate families.

Entries will be judged by a panel of nationally known computer artists. Each entry must be wholly the product of the developer in whose name the entry has been submitted. Outside assistance is expressly prohibited and will provide cause for disqualification. An entry must consist of no more than two self-contained, complete programs on disk. A photo of the screen display or a program print-out does not constitute an acceptable entry. Entries become the property of Contemporary Marketing, Inc., which reserves the right to adapt, use or publish all entries received. No disks will be returned, so be sure to make a copy of your entry before you submit it to the contest.

Contemporary Marketing, Inc. assumes no responsibility for lost, late or misdirected entries. Non-winning entries will not be acknowledged. Winners will be notified by February 28, 1986. Taxes on cash prizes are the winners' responsibilities.

Offer void wherever prohibited or restricted by law.

Fame and Fortune Can be Yours!

Grand Prize: \$500 and Publication in *Commodore Power/Play*
Five Runners Up: \$100 and Publication in *Commodore Power/Play*

NAME		PHONE	
ADDRESS			
CITY		STATE	ZIP
AGE	SIGNATURE		
PARENT'S SIGNATURE (IF CONTESTANT IS UNDER 18)			
GRAPHICS PACKAGE OR PROGRAMMING AID USED			
PICTURE TITLE #1			
PICTURE TITLE #2			

Multiscreen for the Commodore 64

Create text screens to use as help screens, data screens, game instructions, or whatever you need.

Have you ever had the need for more than one text screen in a program? Sometimes they can be very useful. For example, you can use them as help screens, or for different levels or stages in a game. One way of creating extra screens is to buy a BASIC language extension, such as *Sims' BASIC*, and load your screen from the disk. While it is nice to be able to do that, it does take a few seconds to load the screens, and of course it takes some dollars to buy the language extension. Now you have a better way.

What we have done is create a small BASIC extension called Multiscreen. When you are using Multiscreen, you have five additional low-resolution color screens, as well as your normal screen. That gives you six screens and color memories in all. And, best of all, it doesn't take any memory from BASIC, so you have all the normal space for your BASIC program.

Multiscreen consists of five screens, or slots, that are stored in the RAM under the BASIC operating system, and also in part of the block of free

RAM that begins at \$C000 (49152). You have room for DOS 5.1, and there are several hundred bytes still free from \$C801-\$C9FF (51201-51711) for your own machine language programs. By using the RAM under BASIC and at \$C000, we leave all the normal BASIC programming memory untouched and available to you. The machine language for Multiscreen is from \$CA00-\$CBFF (51712 to 52223).

Not only can you store any color text screen to one of these slots, you can also save the contents of any slot to disk for later use! So your program can use your normal text screen, the five extra ones in slots one through five, and dozens more on disk. And when recalling a screen from a slot, you don't have to wait, because the screen is transferred instantly.

How do you use it? We set up three commands using the SYS statement, which can be executed very swiftly from your BASIC program. The base address of Multiscreen is 51715, and you use it in a program by way of a SYS statement, followed by the required parameters for each function separated by commas. The first command is for saving a screen to a slot or loading a screen from one of the five screen slots in memory. The syntax is SYS AD+6,F,slot#. AD is the base address. The F is either zero (for saving to) or one (for recalling from). The slot number is from one to five. The second command is for saving a slot to disk. Its syntax is SYS AD,slot#, "filename". Again, the slot number is from one to five and "filename" is the name you have given the screen. The third command loads a screen from disk into a specified slot. Its syntax is SYS AD+3,slot#, "filename".

Listing 1 is Multiscreen, which is a BASIC program that pokes in a machine language program from data

statements. Be sure to save it before you run it. Listing 2 is a demonstration program for Multiscreen, and requires you to run Multiscreen before you can use it.

Listing 2 uses the Multiscreen commands and allows you to create screens for other uses. It allows you to edit a screen, load a screen from disk to any of five screen slots and save a screen to disk from any of five screen slots. You can easily prepare pictures consisting of text and/or graphic characters, using the 64's full-screen editor.

When you use the Multiscreen editor, you can put any character—reverse or normal—in any of 16 colors on the screen. With practice, it is possible to make some very nice pictures using the Commodore 64's special characters. Use the cursor keys to move around the screen, typing whatever character you need. Don't press RETURN until you are ready to have the screen stored in a slot. To change colors, use the CTRL and Commodore logo keys, as you normally do. The INST/DEL and CLR/HOME keys also function normally.

When you have finished your picture, press RETURN and your design is saved in one of the slots (you are asked which one). You can then return to the editor to make another picture, save what you have to disk, or quit. If you do save anything, it is on the disk for later recall to be edited or used in a program. When not in the editing mode, you can press keys one through five to recall those slots for viewing or press I (for instructions) to return to the menu page.

Multiscreen can be used for business programs, help screens, game screens and many other types of programs. It will give programs ready access to screens of data without having to wait for the disk. **C**

Before typing in these programs, read "How to Enter Programs."

Listing 1. Multiscreen

```

10 REM MULTISCREEN'BLRA
20 FOR Z=51712 TO 52058:READ Y
   :POKE Z,Y:NEXT'GSLF
30 END'BACY
40 AD=12*4096+10*256+3'FOXG
50 : 'ABHB
60 SYS AD,SLOT #,"NAME"
   :REM SAVE SLOT TO DISK'CYNL
70 SYS AD+3,SLOT #,"NAME"

                               :REM LOAD SLOT FROM DISK'DCHN
80 : 'ABHE
90 SYS AD+6,0,SLOT # :REM SAVE
   SCREEN TO SLOT IN MEMORY'DLCQ
100 SYS AD+6,1,SLOT # :REM RECALL
   SCREEN FROM SLOT IN MEMORY'DPTI
110 : 'ABHV
120 REM SLOT # IS FROM 1 TO 5'BPEB
130 : 'ABHX
140 REM THE PROGRAM EXISTS'BQDE

```


64 USERS ONLY

```

150 REM FROM $CA00 TO $CBFF
    (51712-52223)'BEFH
160 : 'ABHB
170 REM THIS WILL NOT INTERFERE WITH
    DOS 5.1'BFXL
180 : 'ABHD
190 REM IT WILL USE ALL MEMORY
    FROM'BWEL
200 REM $A000 - $C800 (40960-51200)
    'BYPB
210 REM'BARW
220 REM'BARX
230 DATA 76,168,202,76,182,202,76,
    243'BDXE
240 DATA 202,32,253,174,32,235,183,
    165'BEDG
250 DATA 20,133,2,224,0,240,38,
    224'BAQG
260 DATA 6,176,34,202,188,80,203,
    189'BCWH
270 DATA 75,203,170,165,2,208,23,
    134'BCFI
280 DATA 253,132,254,169,0,133,251,
    169'BEHK
290 DATA 216,133,252,32,90,202,169,
    4'BCGK
300 DATA 133,252,32,90,202,96,32,
    35'BBHC
310 DATA 203,134,251,132,252,169,216,
    133'BGWE
320 DATA 254,169,0,133,253,32,90,
    202'BCFE
330 DATA 169,4,133,254,32,90,202,
    76'BBOF
340 DATA 48,203,160,0,162,3,177,
    251'BBEG
350 DATA 145,253,200,208,249,230,252,
    230'BGUI
360 DATA 254,202,208,242,177,251,145,
    253'BGFJ
370 DATA 200,192,232,208,247,230,252,
    230'BGRK
380 DATA 254,96,147,13,13,67,79,
    80'BAFK
390 DATA 89,82,73,71,72,84,32,49'BXLL
400 DATA 57,56,52,13,76,79,85,73'BXND
410 DATA 83,32,87,65,76,76,65,67'BXTE
420 DATA 69,32,38,13,75,69,78,32'BXJF
430 DATA 70,82,69,78,67,72,13,0'BWHF
440 DATA 162,0,189,122,202,240,6,
    32'BBXH
450 DATA 210,255,232,208,245,96,32,
    253'BEGJ
460 DATA 174,32,158,183,224,0,240,
    48'BCMJ
470 DATA 224,6,176,44,202,188,80,
    203'BCNK
480 DATA 132,252,188,75,203,132,251,
    188'BFLM
490 DATA 85,203,132,254,169,232,133,
    253'BFGN
500 DATA 32,61,203,32,189,255,32,
    35'BBKE

```

```

510 DATA 203,169,8,170,32,186,255,
    169'BDBF
520 DATA 251,166,253,164,254,32,216,
    255'BFKH
530 DATA 76,48,203,32,253,174,32,
    158'BCTH
540 DATA 183,224,0,240,37,224,6,
    176'BBJI
550 DATA 33,142,90,203,169,8,170,
    160'BCJJ
560 DATA 0,32,186,255,32,61,203,
    32'BABK
570 DATA 189,255,174,90,203,202,188,
    80'BESM
580 DATA 203,189,75,203,170,169,0,
    32'BCMM
590 DATA 213,255,96,165,0,9,1,133'BYLN
600 DATA 0,165,1,41,254,133,1,96'BXJE
610 DATA 165,0,9,1,133,0,165,1'BVDF
620 DATA 9,1,133,1,96,32,253,174'BXRG
630 DATA 32,158,173,32,130,183,166,
    34'BDMI
640 DATA 164,35,96,0,0,0,0,0'BTZI
650 DATA 160,168,176,184,192,167,175,
    183'BGEL
660 DATA 191,199,0'BJWI

```

END

Listing 2. Multiscreen Editor

```

10 PRINT"[RVOFF,CLEAR,RIGHT,SPACE7,
    RIGHT2,YELLOW]MULTISCREEN
    EDITOR"'BAQF
20 A=53280:POKE A,0:POKE A+1,0'EPVD
30 PRINT"[DOWN2,RIGHT10,BLUE]
    GENERAL COMMANDS[GREEN]"'BACF
40 PRINT"[DOWN,RIGHT7,CYAN]S[GREEN]
    AVE SLOT TO DISK"'BAXG
50 PRINT"[RIGHT7,CYAN]L[GREEN]
    OAD SLOT FROM DISK"'BAHI
60 PRINT"[RIGHT7,CYAN]E[GREEN]
    DIT A SCREEN"'BAWH
70 PRINT"[RIGHT7,CYAN]I[GREEN]
    NSTRUCTIONS"'BABI
80 PRINT"[RIGHT7,CYAN]1-5[GREEN]
    RECALL A SLOT"'BANK
90 REM THESE ARE SPECIFIC TO THE
    EDITOR'BCM N
100 PRINT"[DOWN3,RIGHT10,BLUE]
    EDITOR COMMANDS"'BAIB
110 PRINT"[DOWN,RIGHT7,CYAN]RETURN
    [GREEN] TO END DRAWING"'BALE
120 PRINT"[RIGHT7,GREEN]USE [CYAN]
    CURSOR KEYS[GREEN] TO MOVE"'BAEF
130 PRINT"[RIGHT7,CYAN]COLOR[GREEN],
    [CYAN]INST/DEL[GREEN], [CYAN]
    CLR/HOME[GREEN]"'BAUI
140 PRINT"[RIGHT7,GREEN]AND [CYAN]
    REVERSE ON/OFF"'BAIG
150 PRINT"[RIGHT7,GREEN]
    KEYS ALL WORK NORMALLY "'BASH
160 PRINT"[GREEN]"'BAHB
170 AD=51715: REM BASE ADDRESS'CTKI
180 PT=1'BDJE
190 GET AS : REM MAIN LOOP'CLUI

```

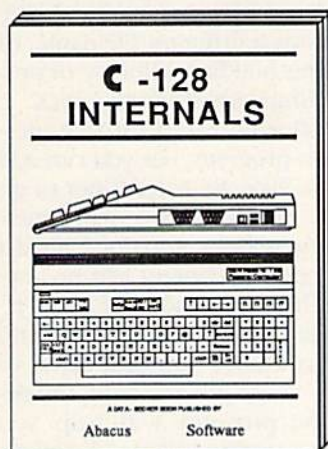

KEYBOARD OVERLAYS



These cut-it-out yourself overlays are designed to fit over the keyboard surrounding the keys with commands and controls grouped together for easy references.

(END)

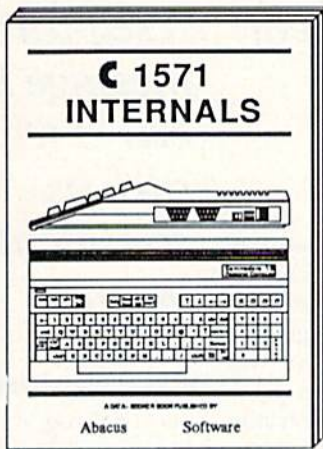
AUTHORITATIVE, COMPREHENSIVE, DEFINITIVE booksbooksbooks



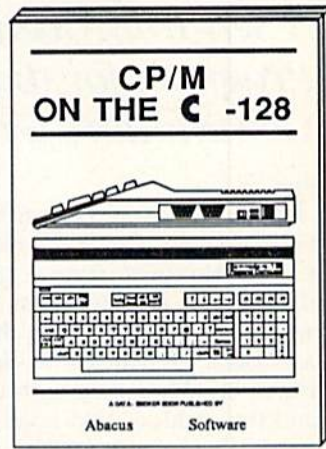
With ROM listings
Avail. Nov. \$19.95



For the programmer
Avail. Nov. \$19.95

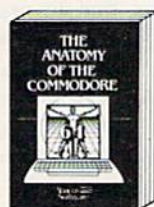


With ROM listings
Avail. Dec. \$19.95

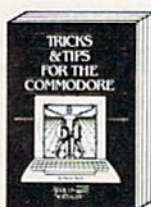


Especially for the '128
Avail. Dec. \$19.95

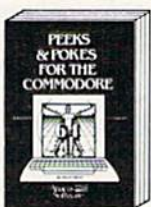
...and more books.



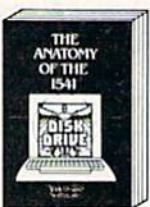
For two years a best
seller. C-64 internals
w/ROM listings. \$19.95



Favorite among pro-
grammers. 75,000+
sold worldwide. \$19.95



Quickhitting, easy-to-
use routines for every
C-64 owner. \$14.95



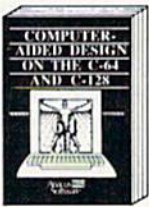
All time best seller.
Revised & expanded.
ROM listings. \$19.95



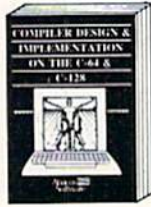
Brand new! Complete
maintenance and repair
procedures. \$19.95



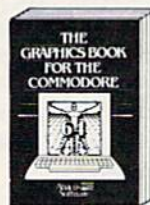
Intro to computers and
world of science. Real
examples. \$19.95



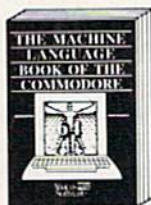
CAD techniques using
C-128/C-64. Many pro-
gram examples. \$19.95



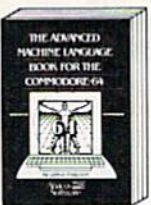
Learn to design and
write your own compiler.
With examples. \$19.95



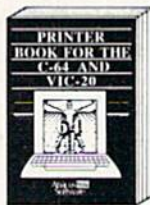
Most in depth treatment
available. Dozens of
techniques. \$19.95



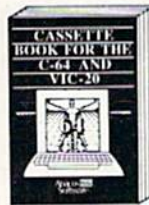
Intro to machine lan-
guage geared to C-64.
Assembler incl. \$14.95



Techniques never cov-
ered before: interrupts,
controllers, etc. \$14.95



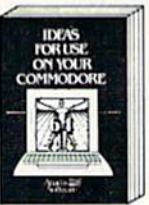
All about using printers
and '64. Graphics, text,
interfaces. \$19.95



A must for cassette
owner. Hi speed cas-
sette system. \$19.95



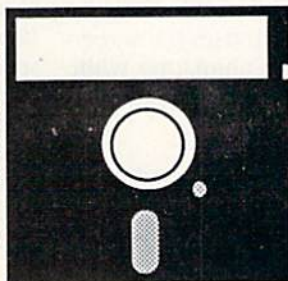
Write your own adven-
tures. Learn strategy,
motivation. \$14.95



Dozens of interesting
projects for your '64.
Easy to read. \$12.95



OPTIONAL DISKETTES
are also available for
each of our book titles.
Each diskette contains
the programs found in the
book to save you the time
of typing them in at the
keyboard. Price of each
diskette is \$14.95.



Call now, for the name of your nearest dealer. Or order
directly from ABACUS with your MC, VISA or AMEX card.
Add \$4.00 for postage and handling. Foreign orders add
\$6.00 per book. Other software and books are also avail-
able. Call or write for free catalog. Dealer inquiries welcome
- over 1200 dealers nationwide. Call

Abacus Software

P.O. Box 7211 Grand Rapids, MI 49510
Phone 616/241-5510 Telex 709-101

Pygmalion

A Self-Improvement Program for the Commodore 64

There is a lovely fable from ancient Greece about a sculptor named Pygmalion. He spent many years creating the statue of the most beautiful woman he could imagine, the goddess Aphrodite. When his work was finished, he fell in love with the statue, and the goddess, taking pity on him, caused it to come to life. As Galatea (that was her name) descended from her pedestal, she saw Pygmalion—sweaty, disheveled, unshaven, worn out by his labor. Touching his cheek, she said to him, "Dear husband, you worked so hard to make me beautiful, now it is my turn to work on you." I have chosen to call this program by this ancient name because it is a self-improvement program using subliminal messages.

Pygmalion uses both text (flashing messages) and graphics (animation) on the same screen to create subliminal stimulation for self improvement. Subliminal stimulation takes place below the threshold of conscious awareness, so you don't realize the messages are flashing, but is recognized and acted on by the unconscious.

This program will *not* hypnotize you, but *will* help you relax. It is in this relaxed state that the messages you have embedded in the program will be most effective to help you break habits (smoking, overeating) and/or initiate self-improvement behavior (self-confidence, assertiveness, stress relief). *You* will create these messages yourself, *you* will control the program, *you* will always be in charge. The computer cannot "program" you, it can only display to you what you want to see.

Entering and Running the Program

Type the program from the listing, but delete all "REM" and ":" statements. Change lines 10-50 to your own subliminal messages and save the program to tape or disk. You must

A self-directed message is one that has "I feel" content, such as, "I feel self confident," or, "I feel thinner."

save the program first as a precaution. It uses pokes for the animation sequence, and if you have made a typing error, the program can get into the BASIC section of memory and destroy itself. As long as you have a saved version, you can call it back and correct it without re-typing the whole thing.

After your program is entered and you type RUN, the screen will clear and display a title and three instruction screens. It will ask for an animation speed from the user and then go to work. The screen will clear and the computer will begin to draw a series of concentric rectangles in clockwise motion, starting with the outermost rectangle, moving inward to the center of the screen. Each rectangle is drawn in a different color picked at random by the computer. When the screen is filled, the computer will flash a message, picked at random, on the top line, and begin to draw the rectangles again, tracing over those that are already displayed.

Since the colors of the rectangles are picked at random, including colors that have already been used, the pattern and sequence of rectangles is never repeated. The motion of the rectangle-drawing procedure invites the eye to follow it into the center of the screen. The message flashed is not consciously readable, and hardly noticeable. The program uses the screen memory map for the animation while it uses simple PRINT statements to produce the messages.

Subliminal Message Content and Technique

You will have to enter the subliminal messages into the program listing

before you run it. After you have done so, you can save the program to tape or disk, change the messages and save it again (using a different file name, of course), thus building a library of programs dealing with different topics.

I have allowed room for five messages in the program, but you can add more if you like. Be careful not to go overboard and write too many messages. A few will do; you don't need a lot. The message content can be anything you like, but is usually most effective when it is simple, positive, and self-directed. Since you only have 40 characters to use per message, the design of the program will help you keep your message simple. A self-directed message is one that has "I feel" content, such as, "I feel self confident," or, "I feel thinner." This works because your subconscious mind is primarily concerned with two things: self and feeling. By targeting your messages in this way, you'll get the most out of this program.

The topics you choose can be anything that interests you, but, in order to be effective, they should cover areas that are of genuine concern to you. Something you don't care about won't interest you on any level, conscious or subconscious, and will be a waste of time.

Also, you should gear your messages toward positive personal growth. Using messages such as, "I feel angry," or, "I feel stupid" are not only counterproductive, they won't work. Your mind (which is infinitely more powerful than a computer) will simply reject the information because it conflicts with the natural inclination of the mind to feel good.

Finally, be ethical with this program. Don't show it to anyone without first explaining what it does (would you like to be tricked by a computer program?) and allowing that person to decide whether or not he or she wants to view it. There is a famous story about a movie theatre sending subliminal messages, "Buy popcorn," during a film. The management claimed that popcorn sales increased dramatically, and the government clamped down on the practice. There is no guarantee that this program will work for you that way, but to try to use it in such a fashion is an

abuse of technology. However, if you use the techniques described here wisely and well, there is a good possibility that you will have found a method which will help you improve how you feel about yourself, and consequently, how you interact with the world around you.

Setting up the Messages

The first lines of the program listing provide room for the subliminal messages that you will embed into the program. I have provided five blanket statements to show you how it is done. The technique uses the standard Commodore string-variable protocol. You can embed a color command at the beginning of each message if you want it to appear in a color, and that color will remain in effect until a new color command is encountered. Embedding a color command does *not* take away from the allowable character length of the string, nor does it affect the color of the animation. Since the messages use the top screen line only, you have 40 characters to work with—but remember that punctuation and spaces count as characters.

To make things easy, after you type in the program listing, list lines 10 to 50 and write your messages over what is already there. Each of my messages is 40 characters long, so if you stay within their limits, you can't go wrong. And, you can always make the messages less than 40 characters long—just get rid of the extra information in the listing if you are writing over it.

Does the Program Work?

Technically, from a programmer's point of view, if you type the listing correctly, the answer is yes. The program will run the animation and flash the messages. If you don't think the messages really appear, type this into the listing:

```
741 FOR T = 1 TO 2000:NEXT T  
(RETURN)
```

This will put a time delay between the message and the line that erases it.

From a psychological point of view, however, the answer to the question, to quote the Cheshire Cat, is: "That all depends..." We learn largely by repeated "conditioning." We learn to spell by rote; we memorize things by

This program is designed to help you break bad habits like smoking or overeating or initiate self-improvement behavior through the use of subliminal messages.

repeating them over and over to ourselves. This technique of *repetition* is used to train us to perform certain activities and is a key factor (or one of them) in learning. Using this program, we are trying to replace an old learned response or habit with a new one, so the more you use it, the better the chances are that it will work for you.

There are other techniques, besides repetition, that work to change old habits. *Substitution* is one of them. When we get rid of a habit or idea, we may have the feeling that we are leaving a "hole" in our minds. Often, substituting one behavior for another is a very effective way to relieve this sense of emptiness. In this case, you try to suggest to yourself things you can be doing instead of the habit or unwanted thought process.

Another important technique is *relaxation*. Any therapist will tell you that you will accomplish more psychologically if you are relaxed, and a hypnotist depends on relaxation as a key element to suggestion. The more relaxed you are, the more open you are to suggestion. So if you use this program in an atmosphere of tension, it probably won't work at all. For instance, if you constantly try to second-guess the message display, or run over problems from the day's work in your mind while you watch the program, its effectiveness will be reduced. The best way to relax is to take deep breaths (Don't hyperventilate though!) in a calm, steady rhythm while thinking to yourself "relax... relax."

Try to keep wandering thoughts away as you do this. Relaxing is no mystery; nothing strange is going to happen, so you don't have to get excited over the idea of relaxing. Just let tension flow out of you and clear your mind so it can be receptive to new ideas. Some soft music, a quiet atmosphere, soft lights will all help you relax. If you relax so much that you fall asleep, don't worry—you're probably tired, and sleep is just what you need!

You must also have a *desire* to change your behavior if you are to get much out of the program. The mind can be very adept at resisting persuasion, so think carefully before using this program. Your subconscious mind may not feel a need to change—in which case, this program will have no effect. You may target an area that you consciously think needs change, but your subconscious knows better. Consider this often as you use the program. If it begins to annoy you, or you begin to feel bad about using it, that's a good sign that a part of you is blocking the technique. It is up to you to look into your own mind to find out why.

Belief is also critical for the program to work. If you convince yourself that this program can't possibly work, don't worry—it won't! Trust and belief are essential to self-improvement techniques. It's fine to question, to wonder, to doubt, but your chances of success are much improved if you believe that the program can work for you. One way to develop that belief is to expect the program to work. Give yourself a chance by keeping an open mind. A closed mind won't allow anything in.

Also, you should maintain *reasonable expectations* from the program. You didn't become the person you are overnight, so don't expect to change overnight. Change takes time (which is one reason why psychological therapy can go on for so long). Repeated viewings of the program can eventually achieve results. There is no such thing as an instant cure, instant profit or instant anything else (except maybe, instant coffee). Human development takes place gradually, at different speeds for different people. If you want instant gratification, you'll have to look somewhere else—this program can't deliver that.

Finally, *practice* what you preach. Support your messages with *action*. If you want to lose weight, the next time you dive for the fridge, stop a moment and think, "Do I really want to do this?" Maybe you really do! If so, go ahead. You don't have to change yourself if you really don't want to. And, finally, if you slip up from time to time (we all do that) and smoke a cigarette or eat a sundae, be gentle with yourself. Progress is a matter of three steps forward and two steps back-

wards. It may be a slow progress, but in time you will see results.

I make no guarantees concerning this program, other than that it will run if you enter it correctly. There is a lot of controversy over subliminal persuasion techniques, and we have no concrete answers. Some techniques work for some people, others don't. I designed this program to be of interest to you, to offer you an activity you might find useful, and to demonstrate some programming tech-

niques that you might enjoy and be able to adapt to your own computer needs. If you take it at that, you will get something from the exercise in programming, and maybe more. I have had this program for three years, and I have shared it, as both an animation program and a subliminal stimulator. I have never received a negative comment. In fact, one friend sat and watched the animation version of the program for two hours, fascinated. The program is what you make of it. **C**

Before typing this program, read "How to Enter Programs."

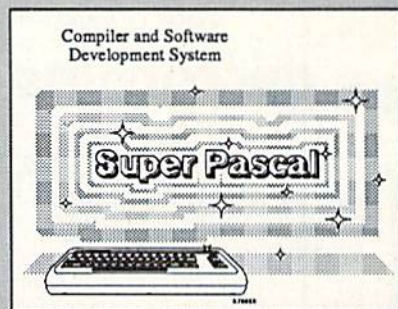
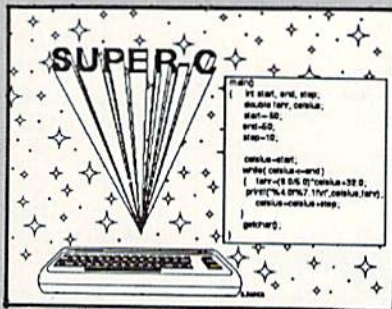
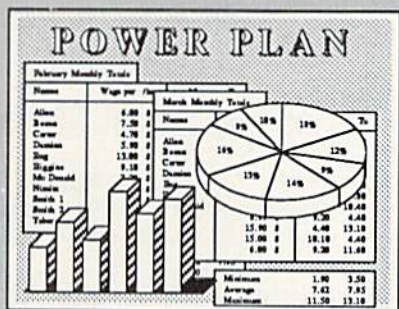
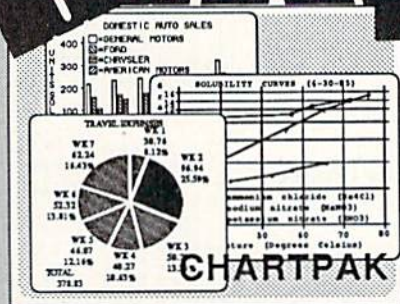
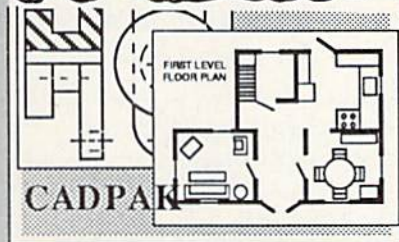
Pygmalion

```

10 M$(1)="THIS-IS-MESSAGE-ONE-WITH---
40-CHARACTERS" 'BFLJ
20 M$(2)="THIS-IS-MESSAGE-TWO-WITH---
40-CHARACTERS" 'BFLK
30 M$(3)=" [BLACK]MESSAGE-THREE-ALSO-H
AS-----40-CHARACTERS" 'BFRL
40 M$(4)=" [WHITE]MESSAGE-FOUR-HAS-40-
CHARACTERS-IN-IT-TOO" 'BFAM
50 M$(5)=" [YELLOW]THIS-IS-MESSAGE-FIV
E-WITH--40-CHARACTERS" 'BFUO
51 : 'ABHC
55 REM***** 'BXJK
56 REM** VARIABLE ASSIGNMENTS 'BVQN
57 REM***** 'BXJM
58 : 'ABHJ
60 BA=53280:SA=53281:REM***** BORDER
AND SCREEN COLOR ADDRESSES
***** 'DFXR
70 CL=54272:REM*** ADD TO SCREEN POKE
TO GENERATE CHARACTER COLOR
*** 'CDTS
80 CH=160:REM*** SET SCREEN CHARACTER
TO REVERSED SPACE *** 'CUOR
81 : 'ABHF
90 REM***** 'BASJ
100 REM** START OF MAIN PROGRAM 'BUQB
105 REM***** 'BYBE
106 : 'ABHB
110 GOTO 1000:REM*** GO TO TITLE AND
INSTRUCTION SCREENS *** 'CQSI
120 X=INT(RND(0)*5)+1:REM*** PICK A
MESSAGE AT RANDOM *** 'GKSJ
130 BC=INT(RND(0)*14)+1 'FKAD
140 REM*** PICK ANY SCREEN/BORDER
COLOR BUT BLACK OR GRAY 3 *** 'BVVM
150 POKE BA,BC:POKE SA,BC
:REM** SCREEN/BORDER THE SAME
COLOR *** 'DRYM
160 A=1064:B=A+39:C=B+880
:D=C-39 'HVKK
170 REM** SET STARTING 4 CORNER
COORDINATES FOR ANIMATION
SEQUENCE *** 'BEIR
171 : 'ABHD
175 REM***** 'BYBL
176 REM** BEGIN ANIMATION LOOPS 'BVQO
177 REM***** 'BYBN
178 : 'ABHK
180 CR=INT(RND(0)*14)+1
:REM** PICK CHARACTER COLOR - NOT
BLACK OR GRAY3 *** 'GYET
190 FOR L = A TO B'DDPG
200 GOSUB 600 'BDJW
210 NEXT L:REM*** PLOT TOP LINE
COORDINATES AND DRAW THEM *** 'CQLJ
220 FOR L= B TO C STEP 40 'EFFB
230 GOSUB 600 'BDJA
240 NEXT L:REM*** PLOT RIGHT SIDE
COORDINATES AND DRAW THEM *** 'CSWM
250 FOR L= C TO D STEP -1 'FEVF
260 GOSUB 600 'BDJD
270 NEXT L:REM*** PLOT BOTTOM LINE
COORDINATES AND DRAW THEM *** 'CTGQ
280 FOR L= D TO A STEP -40 'FFUI
290 GOSUB 600 'BDJG
300 NEXT L:REM*** PLOT LEFT SIDE
COORDINATES AND DRAW THEM *** 'CROJ
310 IF FL=1 THEN 1050:REM*** IF FLAG,
GO TO INSTRUCTION SCREENS
*** 'ESFL
320 A=A+41:B=B+39:C=C-41:D=D-39
:REM*** REDUCE RECTANGLE SIZE BY
ONE *** 'JAJR
330 IF L = 1475 THEN GOSUB 700
:GOTO 120 'FMWF
340 REM*** IF SCREEN IS FULL PRINT
MESSAGE--THEN RESTART SEQUENCE
*** 'BDPQ
350 GOTO 180:REM** IF SCREEN IS NOT
FULL PICK NEW COLOR AND DRAW
*** 'CTAP
352 REM** A NEW, SMALLER RECTANGLE
** 'BAAL
353 : 'ABHF
600 REM***** 'BASE
601 REM**PRINT TO SCREEN ROUTINE 'BWXX
602 REM***** 'BASG
603 : 'ABHD
610 FOR T=1 TO DE:NEXT T
:REM** DELAY LOOP TO SET SPEED OF
ANIMATION *** 'FRJP
620 POKE L,CH:POKE L+CL,CR'DLBG
630 REM*** POKE CHARACTER TO SCREEN
IN COLOR CHOSEN BY RND FUNCTION
** 'BCIS

```


SOFTWARE HARVEST



Cadpak Enhanced Version - Graphics design and drawing package. Create detailed designs with dimensioning, scaling, text, rotating, more. Use with or without lightpen. Hardcopy. \$39.95

PowerPlan - "one of the best programs ever written for the C-64" Commodore Magazine, Nov 1985. Complete spreadsheet with builtin graphics. Cell formatting, protection, windowing, HELP. \$49.95

Chartpak - Make professional quality pie, bar and line charts/graphs directly from your data. Instantly draw or redraw charts to your specifications. Statistics capabilities. Hardcopy. \$39.95

Super C - Complete C language development system. Enhanced full-screen editor, compiler, linker, library and extensive handbook. Used by thousands in schools and industry. \$79.95

Xper - First expert system for C-128 and C-64. Ordinary data bases play back facts, but XPER's *knowledge base* help you identify, diagnosis and select - in short helps make decisions. \$59.95

Super Pascal - Complete Pascal language development system. Full-screen editor, compiler, integrated assembler, graphics toolkit, fast DOS (3X faster than 1541) and handbook. \$59.95

Call now, for the name of your nearest dealer. Or order directly from ABACUS with your Mastercard, VISA or AMEX card. Add \$4.00 for postage and handling. Foreign orders add \$10.00 per product. Other software and books are also available. Call or write for free catalog. Dealer inquiries welcome - over 1200 dealers nationwide.

Abacus Software
P.O. Box 7211 Grand Rapids, MI 49510
Tel. 616/241-5510 Telex 709-101

Program Like a Pro! In the C-128 Mode

New!!



C-128 Update!

- The Commodore 128 Mode** Learn about memory organization and operating system of the C-128 and storage on the 1571 drive.
- Algorithms** Learn the formulas for computer programming tasks.
- Assembly Language** Updated for machine language programming in the C-128 mode as well as C-64 mode. Monitor instructions.

\$14.95 Each at your favorite book or computer store or order direct. Mail or call. Master Card/Visa orders call (619) 484-3884 or (619) 578-4588 or Modem orders (619) 486-4694 Fridays-Sundays.

Dealer Inquiries invited.

Mail to:

microcomscribe
8982 Stimson Ct., San Diego, CA 92129



BETTER KEYBOARD UTILITY.

A simply elegant solution—blank "Cheat Sheets" give you the keyboard commands you need, instantly, for any program.

A pack of 12 cards die cut to fit your keyboard. Ready for YOU TO FILL IN. Have all of your program commands right where you want them... on your keyboard. Order a couple of packs today.

set of 12 custom die cut sheets **\$12.95**

set of 24 custom die cut sheets **\$19.95**

BETTER DUST PROTECTION FOR AMIGA, VIC & C-64

Choose an attractive stat-free cover for your keyboard, monitor or complete system.

Deluxe covers are custom-fitted to each element of your Commodore, and are sewn, not glued with a special dust proof, tightly woven fabric. Neutral color fits beautifully in any office or home. Available for Amiga: monitor and system unit cover (\$17.95). Amiga monitor only (\$12.95). Amiga system unit only (\$12.95). Available for C-64: computer cover (\$10.95), monitor cover (\$12.95), 1541 disk drive cover (\$9.95), data-set cover (\$7.95). Printer covers (specify type and size) \$14.95



\$7.95 to \$14.95

We Can Solve All Your Commodore Color Problems

Unique Problem Solvers for Older Commodores (with 5 Pin Monitor Din Plug).

The Interference Stopper installs in minutes with two simple solder connections. Absolutely stops 90% of the RF interference.

\$15.95

The Color Sharpener... Use if your "old 64" is hooked up to a TV. Just plug into the monitor plug, and the color and contrast immediately improve.

\$18.95

The NEW Color Sharpener CABLE... Use if your "old 64" is hooked up to a monitor. A new 2 prong cable, with a Color Sharpener built in for your monitor.

\$24.95

The Monitor "Improver"... If you have a Commodore 1701 monitor, this cable (3 prong) gives you a picture you won't believe. Better than the cable Commodore built. (Also hooks your "old 64" to the 1702).

\$24.95

RESET SWITCHES

2 Versions for Every Need

At last, the "needed" switch for Vic-20 and Commodore. Commodore left out a reset switch. Our switches will return control to you every time.

Version 1—Install It Yourself. Requires two simple solder connections, and drill a small hole. Works great.

\$9.95

Version 2—Use in any Commodore Application. A special buffered flow-thru version, that simply plugs in and provides your computer with a serial port and a reset switch. The ultimate in versatility, convenience and simple installation. No soldering.

\$21.95

Order Today!

Please send me the following: (Please describe fully. Send U.S. funds only.)

Your satisfaction guaranteed or your purchase price refunded.

Qty.	Item	Price	SHIP TO:
			Name
			Address
			City
			State/Zip
	Total for Merchandise		
	Shipping and Handling (foreign orders add \$5.00)	2.50	
	5% State Tax (WI Residents only)		
	TOTAL ENCLOSED		

Mail to:
Bytes & Pieces, Inc.
550 N. 68th St.
Wauwatosa, WI 53213/(414) 257-1214

64 USERS ONLY

```

640 RETURN:REM*** GO BACK FOR NEXT
    SCREEN LOCATION ***'CJGO
641 : 'ABHF
700 REM*****'BBKF
701 REM* MESSAGE PRINTING ROUTINE'BXDJ
702 REM*****'BBKH
703 : 'ABHE
740 PRINT"[HOME]";MS(X)
    :REM*** PRINT MESSAGE ON TOP
    SCREEN LINE ***'CPHQ
741 : 'ABHG
750 PRINT"[HOME,SPACE40]"'BAVL
760 REM*** PRINT 40 SPACES TO WIPE
    OUT MESSAGE ***'BKQR
770 RETURN:REM** GO BACK TO LINE 330
    ***'CUHO
791 : 'ABHL
1000 REM*****'BPFV
1005 REM** TITLE SCREEN'BNLC
1006 REM*****'BPFC
1007 : 'ABHA
1010 POKE BA,11:POKE SA,12
    :REM***** SET SCREEN/BORDER TO
    SHADES OF GRAY ***'DYUI
1020 FL=1:REM*** SET FLAG FOR
    ANIMATION TO OBEY ***'CKCF
1030 PRINT"[CLEAR,BLACK,DOWN10,
    RIGHT15]PYGMALEON";'BBLD
1035 PRINT"[DOWN,LEFT5]BY[DOWN2,LEFT7]
    TIM THOMPSON"'BASN
1040 GOTO 160:REM***** PRINT TITLE
    SCREEN AND DRAW BORDER *****'CSBJ
1050 FL=0:REM*** RELEASE FLAG ***'CVIE
1060 FOR T=1 TO 880:NEXT T
    :REM***** WAIT ONE SECOND
    *****'FGAJ
1070 FOR M=1 TO 10:PRINT:NEXT M
    :REM***** SCROLL SCREEN AWAY
    *****'GKIL
1071 : 'ABHB
1073 REM*****'BYBH
1074 REM** INSTRUCTION SCREEN #1'BVNK
1075 REM*****'BYBJ
1076 : 'ABHG
1080 PRINT"THIS PROGRAM WILL DRAW A
    SERIES OF";'BBHL
1085 PRINT"[RIGHT6]CONCENTRIC
    RECTANGLES IN ";'BBTO
1090 PRINT"DIFFERENT":PRINT"COLORS,
    EACH ONE BEING SMALLER THAN
    THE"'CBTQ
1095 PRINT"ONE BEFORE IT,
    UNTIL THE ENTIRE SCREEN"
    :PRINT"IS FILLED."'CBOV
1100 PRINT:PRINT"WHEN THAT HAPPENS,
    THE SCREEN AND BORDER";'CCNG
1110 PRINT"WILL CHANGE COLOR AND THE
    SEQUENCE WILL"'BACG
1120 PRINT"BEGIN AGAIN.":PRINT
    :PRINT"EACH TIME A RECTANGLE IS
    COMPLETE,"'DCFK
1130 PRINT"THE COMPUTER PICKS A NEW
    COLOR FOR THE"'BALH
    
```

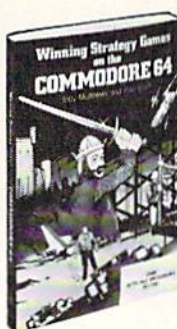
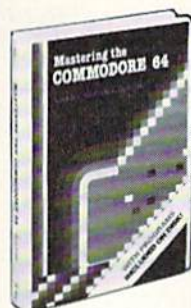

64 USERS ONLY

```

1140 PRINT"NEXT RECTANGLE. THIS NEW
      COLOR MIGHT BE"'BADJ
1150 PRINT"THE SAME AS THE OLD COLOR,
      OR IT COULD"'BANJ
1160 PRINT"BE DIFFERENT...ONLY THE
      COMPUTER KNOWS!"'BAOL
1170 PRINT"TWO RECTANGLES OF THE SAME
      COLOR WILL"'BAWL
1180 PRINT"APPEAR TWICE AS WIDE AS
      THE OTHERS."'BAXL
1190 PRINT:PRINT"THUS, WHAT YOU SEE
      IS NEVER THE SAME."'CBGO
1200 PRINT:PRINT"[RIGHT6,RVS]
      PRESS ANY KEY FOR NEXT PAGE
      [DOWN3]"'CBGE
1210 GET K$:IF K$=""THEN 1210
      :REM** WAIT FOR ANY KEY TO BE
      PRESSED **'FNEI
1211 : 'ABHW
1214 REM*****'BYBE
1215 REM** INSTRUCTION SCREEN #2'BOVH
1216 REM*****'BYBG
1217 : 'ABHD
1220 PRINT:PRINT:PRINT"THIS CAN BE
      VERY RELAXING."'DCBG
1230 PRINT:PRINT"WHILE YOU WATCH THIS
      ANIMATION, FOLLOW"'CBPJ
1240 PRINT"THE PATTERN WITH YOUR
      EYES."'BAEH
1250 PRINT:PRINT"BREATHE DEEPLY AND
      LET THE SMOOTH MOTION";'CCSM
1260 PRINT"HELP YOU ACHIEVE A FEELING
      OF PEACE AND"'BAFL
1270 PRINT"CALM.[SPACE2]
      LET GO OF TENSION AND
      STRESS."'BAUL
1280 PRINT:PRINT"PERHAPS,
      YOU MIGHT LIKE TO LISTEN
      TO"'CBGO
1290 PRINT"SOME SOFT MUSIC AS YOU
      WATCH."'BATM
1300 PRINT:PRINT"IF YOU DO LISTEN TO
      MUSIC, PLAY"'CBJF
1310 PRINT"SOMETHING SOOTHING THAT
      HELPS YOU RELAX."'BAAI
1320 PRINT"AS YOU WATCH,
      THE COMPUTER WILL FLASH"'BALI
1330 PRINT"SPECIAL MESSAGES FOR YOU.
      [SPACE2]DON'T TRY TO"'BACK
1340 PRINT"READ THEM, JUST SIT BACK
      AND WATCH."'BAUJ
1350 PRINT:PRINT"LET THE COMPUTER
      WORK FOR YOU AS YOU"'CBKM
1360 PRINT"RELAX AND ENJOY ALL THE
      PATTERNS AND"'BAWM
1370 PRINT"COLORS IT PRODUCES."'BAKI
1380 PRINT:PRINT"[RIGHT6,RVS]
      PRESS ANY KEY FOR NEXT PAGE"'CBFN
1390 GET K$:IF K$=""THEN 1390
      :REM** WAIT FOR ANY KEY TO BE
      PRESSED **'FNIS
1391 : 'ABHG
1392 REM*****'BYBL
  
```

FREE 15-DAY TRIAL OFFER

SOFTWARE PAK™



A TRIPLEHEADER FOR YOUR COMMODORE 64

A trio of Software Paks™ where book learning and disk instruction combine to help you get all the power, and fun, out of your Commodore.

MASTERING THE COMMODORE 64 by Antonia J. Jones & G. Carpenter, bridges the gap between the beginner's knowledge of BASIC and a real understanding of what's inside the Commodore 64. **\$39.90**

COMMODORE 64 DATA FILE PROGRAMMING by Glenn Fisher, Leroy Finkel & Jerald Brown, a guide to programming and maintaining data files, teaches you how to track billings, inventories and expenses; maintain catalog materials and mailing lists. **\$39.90**

WINNING STRATEGY GAMES ON THE COMMODORE 64 by Toby Matthews and Paul Smith includes 10 strategy games that challenge your intelligence. Games range from Grand Prix auto racing to investing in the stock market to running your own computer manufacturing company. You can devise your own strategy game or manipulate variables in existing games. **\$39.90**

System Requirements: Commodore 64, 1541 disk drive, TV or monitor

Examine the books only in the item(s) selected FREE for 15 days. Either keep the product(s) and return the accompanying invoice with your payment (including postage & handling and local sales tax) or return within 15 days without further obligation.

Note: Returns will not be accepted if the seal covering the program disk is broken.

For Faster Service call: 1-212-850-6788

wiley
PROFESSIONAL
SOFTWARE

Or write: Leslie Bixel
Wiley Professional Software
John Wiley & Sons, Inc.
605 Third Avenue
New York, N.Y. 10158

Dealer Inquiries Invited



Commodore® 64 is a trademark of Commodore International.
Software Pak™ is a trademark of John Wiley & Sons, Inc.

64 USERS ONLY

```

1394 REM** INSTRUCTION SCREEN #3'BVPP
1395 REM*****'BYBO
1396 :'ABHL
1400 PRINT:PRINT:PRINT"BEFORE WE
      BEGIN, THE COMPUTER NEEDS
      TO" 'DCVJ
1410 PRINT"GET AN IDEA OF WHAT
      ANIMATION SPEED IS" 'BASI
1420 PRINT"IS MOST RELAXING FOR
      YOU." 'BAUG
1430 PRINT:PRINT"AT THE PROMPT,
      YOU MAY ENTER A NUMBER" 'CBOL
1440 PRINT"BETWEEN 1 AND 10." 'BANF
1445 PRINT:PRINT"[RIGHT3]
      1 - WILL MAKE THE ANIMATION
      FAST." 'CBVQ
1450 PRINT:PRINT"[RIGHT2]
      10 - WILL MAKE THE ANIMATION
      SLOWER." 'CBRM
1460 PRINT:PRINT"EXPERIMENT WITH
      DIFFERENT SPEEDS EACH" 'CBGO
1470 PRINT"TIME YOU WATCH THIS
      PROGRAM." 'BAGM
1480 PRINT:PRINT"REMEMBER,
      YOU CAN ALWAYS STOP BY" 'CBJP
1490 PRINT"PRESSING THE [RVS] RUN/STOP
      [RVOFF] KEY." 'BAEO
1500 PRINT:PRINT"WE ARE READY TO
      BEGIN. [SPACE2] THE COMPUTER" 'CBPI

```

```

1510 PRINT"WILL START TO DRAW AS SOON
      AS YOU ENTER" 'BAXK
1520 PRINT"A NUMBER AND PRESS [RVS]
      RETURN[RVOFF]." 'BAAI
1530 PRINT"[DOWN2]":PRINT"[UP2]"
      :INPUT"ANIMATION SPEED";DE'DFPJ
1532 REM** GET SPEED FROM USER AND
      STORE IN DELAY VARIABLE **'BSQP
1540 FOR B= 1 TO 24:PRINT:NEXT B
      :REM** SCROLL SCREEN AWAY **'GDDM
1550 PRINT"[GRAY2]":GOTO 120
      :REM** MAKE MESSAGE COLOR GRAY 2
      AND START **'DNVP
1561 REM*ANY COLOR IMBEDDED IN A
      MESSAGE WILL NOT AFFECT THE
      ANIMATION COLOR *'BINW
1563 REM*MESSAGE COLOR WILL OVERRIDE
      THE 'GRAY 2' COLOR COMMAND IN
      1550 *'BEOW
1564 :'ABHI
1565 REM*****'BYBN
1566 REM** TO RUN THIS PROGRAM
      EFFECTIVELY, DELETE ALL 'REM'
      STATEMENTS **'BGUB
1567 REM** AND REMOVE THE NUMBERED
      : ' STATEMENTS **'BMEV
1568 REM** THESE ARE PUT HERE FOR
      CLARITY, NOT FUNCTION **'BQNY
1570 REM*****'BYBJ

```

END

FOR FREE INFORMATION FROM OUR ADVERTISERS

We've removed the reader service numbers from our ads, but you can still get free information about our advertisers' products and services.

Simply turn to the Advertisers' Index on the last page of this magazine. Next to each advertisers' name is their reader service number. Circle the appropriate numbers on the Reader Response Card in this issue, detach the card, affix postage and mail.

Be sure to use the Advertisers' Index and the Reader Response Card in this issue to get free information about our advertisers' products and services.

Your C-64 is PORTABLE with the Systems Go™ Carry-All

GOING PLACES? Take along your Commodore!

Just pop the safety card into your 1541 disk drive, latch it down, slide keyboard, drive, joystick and software into your Systems Go Carry-All and, zip ... you're on your way.



QUICK-EASY-SAFE!

Featherweight. Shockproof. Professional-looking.

Made of tough, high-tech materials. Resists shock, tears, rips, rain and dirt. 1,000-denier Dupont Cordura™ fabric over Polyethylene high-impact foam for protection and support. Padded shoulder strap included.

**LIFETIME
GUARANTEE**

\$49.95

(Also fits the new
C-128 without drive)

Send check or money order payable to Systems Go, Inc. for \$49.95 plus \$4.95 postage and handling for each Carry-All ordered. Please specify choice of color - GRAY or BLACK. Florida residents add 5% sales tax.

Mail to:

Name _____
Address _____
City, State, Zip _____
Telephone () _____

Systems Go™
INC.
P.O. Box 440723
Miami, Florida 33144

Sensational Prices!

... On Our Most Popular Items!

Introducing...

THE 79¢ DISKETTE

Are you paying too much for diskettes? Try our first quality, prime, 5 1/4" diskettes (no rejects, no seconds) at these fantastic sale prices and save, save, **SAVE!** Disks are packaged in boxes of 50; each box contains 5 shrink-wrapped 10-packs that include diskettes in sleeves, labels, and write-protect tabs.

Each diskette is certified to be 100% error free and comes with a lifetime warranty (if you have a problem, we'll replace the diskette). All diskettes include hub reinforcement rings and write-protect notch.

All diskettes are double density and work in either single or double density drives.

SS, DD Diskettes, Box of 50
32391 **\$39.50-79¢ ea.!**

DS, DD Diskettes, Box of 50
32403 **\$49.50-99¢ ea.!**

SPACE SAVING PRINTER STAND!

At last a printer stand priced for homes and small offices! This great new stand from Suncom is elevated so you can place your paper underneath. Features heavy duty welded steel wire construction and has a vinyl coating to reduce noise and vibration. Another plus... the printer is held at an angle that makes it much easier to see your output as it is being printed.

Available in two widths: 12" for most 80 column printers, and 18" for most 132 column printers.

33232 12" Printer Stand **\$14.95**
33246 18" Printer Stand **\$22.95**

CARTRIDGE EXPANDER



Plus **\$22.95**
FAST LOAD
OFFER!

Stop wearing out your computer and cartridges by endless swapping! The Navarone cartridge expander features 3 cartridge slots. Select any cartridge, or the "off" position if no cartridge is to be used. Reset the computer independently of the power switch. Cartridge slots are vertical for easy access—no blind fumbling behind the computer.

33227 Cartridge Expander **\$22.95**

The cartridge expander is a great companion for the Epyx Fast Load cartridge—you can keep it permanently installed plus have two slots free for other cartridges!

34216 Fast Load Cartridge (Sug. Retail \$34.95) **\$29.95**

Fast Load ONLY \$22.95
with purchase of cartridge expander!



star
SG-10

Lowest Price! 33251 **\$CALL**
Also: 34446 SG-10C with Built-In
Commodore Interface! **\$CALL**

We stock a complete line of Star, Epson, BMC, and Axiom peripherals.
Call for best prices!

CARDCO

Interface

• Super High Speed!



NOW IN
STOCK!

• New Low Price!
34484 **\$CALL**

Get Your Computer Talking!

VOICE
MESSENGER
S P E E C H - 6 4

This plug-in speech synthesizer from Welwyn will have your C-64 talking in no time! Add speech to your BASIC programs... also includes direct text to speech capability. Choose from two voices, each with intonation. Includes manual and built-in software.

34939 **Save! \$49.95**

Command Your Computer By Voice!

Give your computer voice recognition capability with the **VOICE COMMAND MODULE** from Eng Manufacturing. The unit plugs into the C-64's RS-232 port via cable (included); a clip-on lapel microphone attaches to the module with a 6' wire. As you speak into the microphone the machine captures a sample of the voice, compares it to a stored pre-recorded sample, and decides if it matches. Stores up to 64 different words for later recall. Package also includes a disk of software programs (includes SOS - Speech Operating System) and a user's manual. Requires disk drive. Compatible with C-128 computer.

34943 **ONLY \$43.95**

PAPER TRACTOR™

Paper Tractor carries ordinary sheet paper through your tractor-feed printer! Simply place your letterhead, checks, invoices, forms, even legal-size sheets into the durable flexible plastic carrier and feed into your adjustable tractor-drive printer.

22084 **\$11.95**

*Please Note—Paper Tractor will not work with some Commodore printers. Check with our Customer Service Department.

DUST COVER and "EVERYTHING BOOK" INTRODUCTORY SPECIAL

Get to know us by ordering this great dust cover for your VIC-20 or Commodore 64, and our catalog, "The Everything Book for the Commodore C-64 and VIC-20 Home Computers," for \$2.95 (no extra shipping or handling charges). Cover is antistatic, translucent, 8 gauge vinyl sewn to our exacting standards with reinforced seams. Discover the savings and easy shopping available from TENEX Computer Express!



\$2.95

31627 Dust Cover and Catalog (VIC)



WHAT DO YOU GET A COMPUTER ENTHUSIAST FOR CHRISTMAS?

A Gift Certificate from TENEX Computer Express!

Give a gift you *know* will be appreciated... a gift certificate and a copy of our catalog filled with computer software, hardware and accessories!

Gift certificates are available for \$25, \$50, \$75, \$100, etc. (in multiples of \$25). Please specify Commodore catalog, or our TI 99/4A catalog. Let us know if you would like the certificate and catalog sent to you, or directly to the gift recipient.

Let the computer hobbyist in your life choose a gift from the hundreds of items listed in our Everything Book catalogs — games, word processors, books, diskettes, printers, interfaces, and more!!

Merry Christmas!!

34981 Christmas Gift Certificate

From Your Friends At
TENEX
Computer
Express

We gladly accept
mail orders!
P.O. Box 6578
South Bend, IN 46660

Questions? Call
219/259-7051

Ad
J1C

SHIPPING CHARGES
ORDER AMOUNT CHARGE
less than \$20.00 \$3.75
\$20.00-\$39.99 4.75
\$40.00-\$74.99 5.75
\$75.00-\$149.99 6.75
\$150.00-\$299.99 7.75
\$300 & up 8.75



NO EXTRA FEE FOR CHARGES

NO HIDDEN EXTRAS

ORDER TOLL FREE
1-800-348-2778

Com 64 Grapher

Design the format for a vertical bar graph, enter up to 60 numbers, and display the results on four screens of 15 bar graphs each.

Com 64 Grapher allows you to design the format of a vertical bar graph, enter up to 60 numbers, and display the results on four screens of 15 bar graphs each.

Various editing options are available: Start a New Bar Graph, Read File from Disk, Write File to Disk, Add to Existing Data, Change Prior Entry, Format Change, List Current Data and Graph Data. These options are accessed by pressing the first letter of the option, which is shown in reverse video.

The Start a New File option sets the parameters of the graph: the name, value of the bottom axis, value of the five vertical intervals, and finally, the name of the bottom axis. The two numerical values will determine the range of your graph (the value of the bottom axis plus five times the vertical interval).

You will now be asked if you want the bars in the same or different colors. The mono-color graphs will be red on black and the multi-color graphs are ten different colors. The next prompt will ask you to enter the graph values. If a number is outside the graphing range (as determined by the format parameters), you will be prompted with a bad entry statement and it will be refused. Otherwise, your entry will be accepted and you will be asked for the next. To leave the entry mode, enter "-1" and you will be returned to the menu. You can display your graph by pressing "G."

The Read a File From Disk option is for when you have previously written a file to disk and you want to recall it for display or modification. You will be asked for the name of the file, so be sure to input the same name that you entered to start the file.

The Write a File to Disk option uses the name of the file in memory and records it. In this way, files are overwritten so old files are constantly updated.

The Add to Existing File option picks up the number of highest bars in memory and lets you continue to add data to the file. To quit the option, again enter "-1."

To Change a Prior Entry, you will be asked what entry number you wish to change, and prompted with the current value, then asked to enter the new one. The same routine applies for the color number. If you do not wish to change color, enter the same number. This option gives you an opportunity to emphasize a special bar in a

mono-colored graph by making it a different color. Don't forget to re-write the file to disk if you want to retain the new entry.

The Format Change option is for when you have exceeded the range of your graph format. This option lets you change the value of the bottom axis of the graph format, the vertical interval, or both.

The List Current Data option makes a screen listing of the file data. It will then list the high and low value and calculate the average value.

The Graph Data option displays the four screens of 15 bar graphs each in either monochrome or multi-color. See the Commodore 64 user guide for color numbers. When a bar graph screen is displayed, it may be printed by pressing the "P" key.

The program has one interesting subroutine that you may find useful in your own programs. Lines 790-810 form a cursor-positioning subroutine that is used frequently. "CO" represents the column number (zero through 39) and "RO" represents the row number (zero through 24).

Line 20 gives an example of its use. Simply give the value of the column and the row to start printing. GOSUB the subroutine, and follow with a print or an input statement. The first letter of your entry will be at the position specified.

Beginning at Line 950, the program has an input subroutine that will accept only numbers. However, when an alpha-numeric is required, it will accept any key except colons, commas, and the cursor movement keys. **C**

Before typing this program, read "How to Enter Programs."

Com 64 Grapher

```
10 DIM G(60),C(60):Z=0:X=0'DRWC
15 POKE 53280,6:POKE 53281,3
   :PRINT CHR$(147):POKE 646,0'FCEK
20 CO=7:RO=4:GOSUB 790:PRINT"*** COM
   64 GRAPHER MENU ***"EMYJ
25 PRINT:PRINT:PRINT TAB(11)CHR$(18)
   "S"CHR$(146)"TART NEW GRAPH
   FILE"GOCP
30 PRINT:PRINT TAB(11)CHR$(18)"R"CHR$(
   146)"EAD FILE FROM DISC"FNIIJ
35 PRINT:PRINT TAB(11)CHR$(18)"W"CHR$(
   146)"RITE FILE TO DISC"FNXO
40 PRINT:PRINT TAB(11)CHR$(18)"A"CHR$(
   146)"DD TO PRIOR DATA"FNCK
45 PRINT:PRINT TAB(11)CHR$(18)"C"CHR$(
```

```
(146)"HANGE PRIOR ENTRY"FNAP
50 PRINT:PRINT TAB(11)CHR$(18)"F"CHR$(
   146)"ORMAT CHANGE"FNFK
55 PRINT:PRINT TAB(11)CHR$(18)"L"CHR$(
   146)"IST CURRENT DATA"FNYYQ
60 PRINT:PRINT TAB(11)CHR$(18)"G"CHR$(
   146)"RAPH DATA"FNFK
65 GET A$:IF A$=""THEN 65'EHSK
70 IF A$="S"THEN Z=0:CC=1
   :GOTO 115'GMTJ
75 IF A$="R"THEN GOSUB 520
   :GOTO 15'FIHM
80 IF A$="A"THEN PRINT CHR$(147):N=E
   :CC=C(N-1)+1:GOTO 176'KXTP
85 IF A$="W"THEN GOSUB 445
   :GOTO 15'FISN
90 IF A$="L"THEN GOSUB 615:ZZ=E-1
   :GOTO 15'HNSM
```


64 USERS ONLY

```

95 IF A$="C" THEN 705'DFPN
100 IF A$="G" THEN 245'DFSX
105 IF A$="F" THEN GOSUB 755
    :GOTO 15'FIFE
110 GOTO 15'BCNV
115 IF X>0 THEN 65'DEND
120 PRINT CHR$(147):CO=2:RO=1
    :GOSUB 790'FRIE
122 PRINT"NAME OF GRAPH: ";:GOSUB 950
    :T$=B$'DKIG
125 PRINT:PRINT TAB(2)"VALUE OF
    BOTTOM AXIS: ";:U=1:GOSUB 950
    :B=VAL(B$)'HROQ
130 PRINT:PRINT TAB(2)"VALUE OF
    VERTICAL INTERVAL: ";:U=1
    :GOSUB 950'FLFL
132 S=VAL(B$)'CFDC
135 PRINT:PRINT TAB(2)"NAME OF BOTTOM
    AXIS: ";:GOSUB 950:X$=B$'FNXO
140 PRINT:PRINT TAB(2)CHR$(156)"ALL
    BARS THE SAME COLOR[SPACE2]
    - PRESS 'A'""EIKM
145 PRINT:PRINT TAB(2)"DIFFERENT
    COLORED BARS[SPACE3]
    - PRESS 'B'""DDTP
150 GET A$:IF A$="" THEN 150'EIFE
155 IF A$="A" THEN Z=1:FOR V=1 TO 60
    :C(V)=2:NEXT:GOTO 170'KUDP
160 IF A$="B" THEN 170'DFKE
165 GOTO 150'BDFH
170 N=1:PRINT:PRINT TAB(2)CHR$(30)
    "INPUT UP TO 60 VALUES""FKNM
175 PRINT:PRINT TAB(2)"TYPE '-1' TO
    END INPUT""DDSO
176 CO=2:RO=17:GOSUB 790'DMJM
178 PRINT CHR$(28)"RANGE OF GRAPH
    IS"B"TO"B+5*S;CHR$(144)'FOOV
180 CO=2:RO=20:GOSUB 790'DMDH
182 PRINT"VALUE TO BE GRAPHED,BAR #";
    N;"[SPACE13]";'BEVO
185 CO=32:RO=20:GOSUB 790:U=1
    :GOSUB 950:G(N)=VAL(B$)'HEKT
190 GN=G(N)'BGTG
192 IF GN<>-1 AND GN<B OR GN>B+5*S
    THEN CO=2:RO=20:GOSUB 790
    :GOSUB 780:GOTO 180'QGVX
195 IF GN=-1 THEN W=0:E=N:GOTO 15'HLDQ
200 IF Z=1 THEN C(N)=2'EHCA
205 IF Z=1 AND N=60 THEN W=0
    :GOTO 15'HKEH
210 IF GN<B OR GN>B+5*S THEN 180'HLGE
215 IF Z=1 THEN N=N+1:GOTO 180'GJSH
220 IF CC=11 THEN CC=1'EHCC
225 C(N)=CC'BGAF
230 CC=CC+1'CFGB
235 IF N=60 THEN 15'DFDG
240 N=N+1:GOTO 180'DHHD
245 W=0:POKE 53280,0:POKE 53281,0
    :POKE 646,5'EYFM
250 PRINT CHR$(147)TAB(8+(32-INT(LEN
    (T$)))/2)T$'IUSK
255 FOR P=1 TO 20:CO=1:RO=P
    :GOSUB 790'QQWN
260 PRINT TAB(7)"[CMDR H,SPACE30,
    CMDR M]":NEXT'DDQJ
265 CO=1:RO=21:GOSUB 790
    :PRINT B;TAB(7)"[SHFT L,CMDR P30,
    SHFT @]""FRUL
270 FOR P=1 TO 4:CO=1:RO=21-4*P
    :GOSUB 790'ISIM
275 PRINT B+P*S;TAB(7)"[SHFT L,
    CMDR P30,SHFT @]""EGHJ
280 NEXT'BAEE
285 CO=1:RO=1:GOSUB 790'DLDN
290 PRINT B+5*S;TAB(7)"[CMDR P32]
    ""EGVF
295 IF W<>0 THEN 305'EFFN
300 X=1'BCIX
305 IF G(X)=-1 THEN C(X)=2
    :GOTO 355'GOXI
310 Y=INT(4*(G(X)-B)/S)'FMFE
315 LS=1871:LC=56143'COJH
320 FOR R=0 TO (Y-1):POKE
    LS+2*(X-15*W)-40*R,160
    :POKE LC+2*(X-15*W)-40*R,C(X)'SQUU
325 NEXT R'BBLE
330 IF X=15 THEN 355'DGMD
335 IF X=30 THEN 355'DGJI
340 IF X=45 THEN 355'DGPE
345 IF X=60 THEN 355'DGMJ
350 X=X+1:GOTO 305'DHBF
355 CO=(40-LEN(X$))/2:RO=23:GOSUB 790
    :PRINT X$;'HYUQ
360 IF W<>0 THEN GOSUB 415
    :GOTO 375'GJPI
365 CO=9:ROW=22:GOSUB 790
    :PRINT"1 2 3 4 5 6 7 8 9 1 1 1 1
    1 1";'EPMT
370 CO=27:RO=23:GOSUB 790
    :PRINT"0 1 2 3 4 5";
    :PRINT CHR$(158);'GWOW
375 CO=0:RO=24:GOSUB 790:PRINT"PRESS
    :'P' TO PRINT[SPACE2]-[SPACE2]
    ANY KEY TO GO ON";'EOLY
380 GET A$:IF A$="" THEN 380'EIKJ
385 IF A$="P" THEN GOSUB 815'EFVN
390 IF X=15 AND X<E-1 THEN W=1:X=X+1
    :POKE 646,5:GOTO 250'WOS
395 IF X=30 AND X<E-1 THEN W=2:X=X+1
    :POKE 646,5:GOTO 250'WOMX
400 IF X=45 AND X<E-1 THEN W=3:X=X+1
    :POKE 646,5:GOTO 250'WOWK
405 IF X=15 OR X=30 OR X=45 AND X=E-1
    THEN 15'KOIN
410 GOTO 15'BCNY
415 IF W=1 THEN CO=9:RO=22:GOSUB 790
    :PRINT"1 1 1 1 2 2 2 2 2 2 2 2
    2 3""HPFQ
420 IF W=1 THEN PRINT TAB(9)"6 7 8 9
    0 1 2 3 4 5 6 7 8 9 0";'FFVJ
422 IF W=1 THEN PRINT CHR$(158);
    :RETURN'GJOH
425 IF W=2 THEN CO=9:RO=22:GOSUB 790
    :PRINT"3 3 3 3 3 3 3 3 4 4 4 4
    4 4""HPRF
430 IF W=2 THEN PRINT TAB(9)"1 2 3 4

```




From stocking-stuffers to gifts that'll light up their eyes, Computer Warehouse is the place to shop. You'll know you're getting the lowest prices: just see the list below and compare!

And even Santa couldn't get your order out faster! So call our hotline today, and wrap up your gift list at Computer Warehouse.

HARDWARE

Commodore 64	139.00
1541 Disk Drive	174.95
1702 Monitor	179.00
803 Printers	159.00
803 Tractor Feed	29.95
Modem 300/1660	79.95
Power Packs	29.95
1101 Printer (daisy wheel)	329.00
C-128	Call
1571 Disk Drive	Call
1670 Modem	Call
1902 Monitor	Call

PRINTERS

Star SG-10	224.00
SG-10L	239.00
Panasonic 1091	279.00
Axiom Elite 5 (daisy wheel)	249.00
Okidata 182	269.00
Legend 80	179.00

MONITORS

Sakata 13" Color	179.00
Zenith 13" Green	89.00
Zenith 13" Amber	99.00
USI 12" Green	79.00

MODEMS

Westridge 6420	69.95
MPP 1064	79.95
Total Telecommunications	59.95
Mighty Mo	79.95

DISK DRIVES

Indus GT	249.95
MSD Single	289.95
MSD Dual	499.95

*We also offer all other Commodore Compatible software.
Call for new titles & prices.

DISKETTES (10-PACKS)

Generic Disks	11.95
SKC SS/SD	13.95
SKC SS/DD	15.95
Elephant SS/SD	16.95
Elephant SS/DD	19.95
Elephant DS/DD	24.95
Elephant Premium SS/DD	21.95
Maxell SS/DD	22.95
Maxell DS/DD	29.95
Bonus SS/DD (11-Pack)	12.95

ACCESSORIES

Floppyclene Head Cleaner	14.95
Numeric Keypad	34.95
Monitor Cables	9.00
6 foot I/O Cable	9.00
Paper—(1000 Sheets)	18.00
Joysticks	7.95
Surge Suppressor 6 outlet w/ 6 ft. cord Emz/Rfi filter	49.95
Diskcover 35 (Storage Box)	5.95
Printer Stand	19.95
*We also carry a full line of Covers, Printer Ribbons, Cables, Labels, Storage Cases.	

SOFTWARE

Printshop	34.95
Graphics Library	24.95
FastLoad	29.95
Fleet System 2	69.95
Zork I, II, III	29.95
Training Kit (C-64 Tutorial)	19.95
Wordpro 3 & 64	39.95
Exodus Ultima III	39.95
Rescue on Fractalus	29.95

COMPUTER WAREHOUSE

(In FL) 305-274-3680; 1-800-372-0214
7222 S.W. 117th Avenue,
Miami, FL 33183

Add 3% for shipping and handling charges.
Ad prices reflect 3% cash discount.
Credit card orders should add 3%.
Prices subject to change
without notice.

64 USERS ONLY

```

5 6 7 8 9 0 1 2 3 4 5";'FFHK
432 IF W=2 THEN PRINT CHR$(158);
:RETURN'GJPI
435 IF W=3 THEN CO=9:RO=22:GOSUB 790
:PRINT"4 4 4 4 5 5 5 5 5 5 5 5
5 6""HPCS
440 IF W=3 THEN PRINT TAB(9)"6 7 8 9
0 1 2 3 4 5 6 7 8 9 0";'FFXL
442 IF W=3 THEN PRINT CHR$(158);
:RETURN'GJQJ
445 REM-WRITE TO DISC'BMNL
450 PRINT CHR$(147);"THE GRAPH BEING
RECORDED IS TITLED":PRINT
:PRINT TS'EKVQ
455 OPEN 2,8,2,"@0:"+TS+",S,W"'DILN
460 PRINT#2,Z'BDEF
465 PRINT#2,B'BDFK
470 PRINT#2,S'BDWG
475 PRINT#2,TS'BEJL
480 PRINT#2,X$'BENH
485 PRINT#2,E'BDIM
490 FOR I=1 TO E'DDYJ
495 PRINT#2,G(I)'BGON
500 PRINT#2,C(I)'BGKA
505 NEXT'BAEE
510 CLOSE 2'BBJA
515 RETURN'BAQF
520 REM-READ FROM TAPE'BNDF
525 PRINT CHR$(147)'CFBI
530 INPUT"GRAPH TITLE";TS'BDKG
535 OPEN 2,8,2,"0:"+TS+",S,R"'DIWL
540 OPEN 15,8,15:INPUT#15,E,ER$,B1,C
:IF E<20 THEN 555'FDIL
545 PRINT"[DOWN]FILE NOT FOUND. TRY
AGAIN!":FOR T=1 TO 2000:NEXT
:CLOSE 2:CLOSE 15'HNRV
550 GOTO 530'BDHF
555 INPUT#2,Z'BDJK
560 INPUT#2,B'BDKG
565 INPUT#2,S'BDCL
570 INPUT#2,TS'BEOH
575 INPUT#2,X$'BESM
580 INPUT#2,E'BDNI
585 FOR I=1 TO E'DDYJ
590 INPUT#2,G(I)'BG TJ
595 INPUT#2,C(I)'BGPO
600 NEXT'BAEA
605 CLOSE 2:CLOSE 15'CESH
610 RETURN'BAQB
615 H=0:REM-LIST CURRENT DATA'CTCM
620 PRINT CHR$(147):PRINT
TAB(20-INT(LEN(TS)/2))TS'ISAK
625 IF H=1 THEN H=0:NEXT'FFQL
630 TT=0:LL=99999999:HH=.00000001'DC
XL
635 FOR I=1 TO E-1:TT=TT+G(I)
:IF G(I)<LL THEN LL=G(I)'KBBU
640 IF G(I)>HH THEN HH=G(I)'EMSJ
645 PRINT TAB(2)X$;I;TAB(30-LEN(STR$(
INT(G(I))))G(I)'HYGS
650 IF I=15 OR I=30 OR I=45 THEN H=1
:FF=0:GOTO 680'KTHP
655 NEXT'BAEK

```


64 USERS ONLY

```

660 PRINT:PRINT"END OF FILE" 'CBOK
665 PRINT:PRINT"HIGH VALUE WAS[SPACE2]
    'HH'CDQR
670 PRINT"LOW VALUE WAS[SPACE3]
    'LL'BCDM
675 PRINT"AVERAGE VALUE=[SPACE2]";
    INT((100*TT/(E-1))+.5)/100
    :FF=1'IXSB
680 CO=12:RO=24:GOSUB 790
    :PRINT"PRESS ANY KEY";'EPIR
685 GET AS:IF AS="" THEN 685'EISR
690 IF FF=1 THEN 15'DFHM
695 IF I=Z AND I=15 OR I=Z AND I=30
    OR I=Z AND I=45 THEN CO=0:RO=16
    :GOSUB 790:GOTO 660'RGNH
700 GOTO 620'BDHC
705 REM-CHANGE PRIOR ENTRY'BRCL
710 PRINT CHR$(147):PRINT'DGGF
715 PRINT TAB(2)"WHICH ENTRY #
    :[SPACE2]";:U=1:GOSUB 950
    :D=VAL(B$)'GQSS
720 PRINT:PRINT TAB(2)"ENTRY # ";D;
    " IS NOW"G(D)'DKHK
725 PRINT:PRINT TAB(2)"ENTER NEW VALUE
    :[SPACE2]";:U=1:GOSUB 950
    :G(D)=VAL(B$)'HUIV
730 PRINT:PRINT TAB(2)"ENTRY # "D"IS
    NOW"G(D)'DIAL
735 PRINT:PRINT TAB(2)"COLOR IS NOW
    KEY # "C(D)'DHJQ
740 PRINT:PRINT TAB(2)"ENTER NEW
    COLOR KEY #:[SPACE2]";:U=1
    :GOSUB 950:C(D)=VAL(B$)'HULT
745 FOR T=1 TO 1000:NEXT:X=1'FKCP
750 GOTO 15'BCNG
755 REM FORMAT CHANGE'BMD0
760 PRINT CHR$(147):CO=2:RO=6
    :GOSUB 790'FRNO
762 PRINT TAB(2)"VALUE OF BOTTOM AXIS
    IS ";B'CEBR
765 PRINT:PRINT TAB(2)"ENTER NEW VALUE
    :[SPACE2]";:U=1:GOSUB 950
    :B=VAL(B$)'HRKY
770 PRINT:PRINT TAB(2)"VALUE OF
    VERTICAL INTERVAL IS ";S'DFET
775 PRINT:PRINT TAB(2)"ENTER NEW VALUE
    :[SPACE2]";:U=1:GOSUB 950
    :S=VAL(B$):RETURN'ISVB
780 PRINT"[SPACE39]"'BAUO
785 CO=2:RO=20:GOSUB 790
    :PRINT"BAD ENTRY":FOR T=1 TO 1000
    :NEXT:RETURN'JWAB
790 REM CURSOR POSITIONING
    SUB-ROUTINE'BDCS
795 PRINT CHR$(19)'CEBR
800 IF RO<>0 THEN POKE 214,RO-1
    :PRINT'HLRJ
805 POKE 211,CO'BGHI
810 RETURN'BAQD
815 REM SCREEN COPY'BKML
820 SI$=CHR$(15):BS$=CHR$(8)
    :PO$=CHR$(16)'GWTN
825 RV$=CHR$(18):RO$=CHR$(146)

```

kyan

PASCAL

For the Commodore 64

kyan pascal is the most complete package available for learning and using the Pascal language.

kyan pascal is easy to use, lightning fast, and loaded with features. It's a full Pascal implementation. It compiles and runs many times faster than other Pascal compilers.

kyan pascal features:

- Optimized Machine Code Compiler;
- Built-In Full Screen Text Editor;
- String-Handling, Chaining, Include File, and Other Powerful Extensions;
- Random Access Files and Full Graphics Support;
- Built-In Assembler (Allows Full Hardware Control);
- 13-Digit Arithmetic Precision; and,
- Tutorial Manual with Sample Programs.

kyan pascal requires 64K of memory and a single disk drive. No additional hardware is necessary. And, it comes with kyan's **MONEY BACK GUARANTEE**... If not completely satisfied, return it within 15 days for a full refund.

kyan pascal for the C64 \$69.95

(Add \$4.50/copy for handling; \$12.00 outside North America; California residents add \$4.55/copy for sales tax)

Send Check/Money Order to: kyan software, Dept. W
Call: (415) 775-2923 1850 Union St., Ste. 183
 MC/Visa Accepted San Francisco, CA 94123

C-64™ • VIC™ • SX-64™ • C-128™ • Plus 4™ • C-16™ • B-128™ • PET™ • CBM™ • LCD™

The best deal in Commodore computing just got better.

The Intelligent Software package: an integrated home/business/educational package of **25 programs** on disk or tape at the ridiculous price of **\$29.95** (plus five cents for postage + handling).

The package is not public domain or home-brew software; totaling over 51 pages of source code listings, it is the one product that can take care of all your data processing needs. One customer writes: "... accolades for the authors. This is as slick a deal as I have seen and more than adequate for all except fancy presentations. The best thing is the ease of use..." The package includes:

Database: A complete multi-keyed fixed-record-length data base manager. Sort or select (using all relational operators: =, >, <, AND, OR, NOT, wild card) on any field, perform computations on numeric fields. Any operation can be performed on all, or only selected records. All fields completely user-definable. Can be used for any number of tasks, including accounting, mailing lists, inventory control, record, tape, or book cataloging, expense account maintenance, or as an electronic rolodex. Even if you use your Commodore for nothing else, this program alone might justify its expense.

Word Processor: A full-featured menu-driven word processor including: very fast file commands, screen editing, text locating and full control over margins, spacing, paging, indentation, and justification. "... well done and highly functional... Provides an excellent alternative to the high priced word processors... this is an excellent buy. Highly recommended." —Midnite Software Gazette. "Provides good basic features." —Compute's Gazette.

Copycalc: An electronic spreadsheet. Turns your Commodore into a visible balance sheet; includes screen editor. "Excellent program for budgeting, estimating, or any math-oriented use... well worth the money. Highly recommended." —Midnite Software Gazette.

Also included: **ReportGen**, **ReportMerge** (interface W/P with Database to create form letters, statements, invoices, mailing labels, other reports.); **Baseball Statistician** (compiles batting statistics for a baseball league); several W/P utilities, including **Index** (indexes W/P's text files); several Database utilities, including **DBmerge** (facilitates multi-file database applications.), and **DBStat** (analyzes D/B files); a programming utility, **ASCII**, which converts text files (program listings) into program files; also **Checkbook**; **Inventory**; **Paper Route**; **Loan Analysis**; **Break-even Analysis**; **Depreciation**; **Labeler**; **File Copier**; more.

Versions of the package are available for every Commodore computer having a minimum of 10k RAM. All programs will support tape, disk, and printer. Price includes documentation and shipping; Calif. residents add 6%. Add \$3 for credit card, COD, 8050 disk, or cassette orders (cassette not available for Plus4™ and 16™). No personal checks from outside USA. This ad is the catalog; a sampling of program output is available for \$2.

Intelligent Software

Quality Software since 1982

Box A Dept. C-5
 San Anselmo, CA 94960
 (415) 457-6153

**It Talks!
It Recognizes!
It Writes Music!**
and more . . .



THE AMAZING VOICE MASTER®

Speech and Music Processor

Your computer can talk in your own voice. Not a synthesizer but a true digitizer that **records** your natural voice quality—and in any language or accent. Words and phrases can be expanded without limit from disk.

And it will understand what you say. A real word recognizer for groups of 32 words or phrases with unlimited expansion from disk memory. **Now you can have a two way conversation with your computer!**

Easy for the beginning programmer with new BASIC commands. Machine language programs and memory locations for the more experienced software author.

Exciting Music Bonus lets you hum or whistle to write and perform. Notes literally scroll by **as you hum!** Your composition can be edited, saved, and printed out. You don't have to know one note from another in order to write and compose!

Based upon new technologies invented by COVOX. One low price buys you the **complete system**—even a voice controlled black-jack game! In addition, you will receive a subscription to COVOX NEWS, a periodic newsletter about speech technology, applications, new products, up-dates, and user contributions. **You will never find a better value for your computer.**

ONLY \$89.95 includes all hardware and software.

For telephone demonstration or additional information, call (503) 342-1271. FREE audio demo tape and brochure available.

Available from your dealer or by mail. When ordering by mail add \$4.00 shipping and handling (\$10.00 for foreign, \$6.00 Canada).

The Voice Master is available for the C64, C128, all Apple II's, and Atari 800, 800XL and 130XE. Specify model when ordering.



For Faster Service on Credit Card Orders only:

ORDER TOLL FREE 1-800-523-9230



COVOX INC.

675-D Conger Street, Eugene, OR 97402
Telex 706017 (AV ALARM UD)

(503) 342-1271

64 USERS ONLY

```

:QT$=CHR$(34)'GYAS
830 MF$=CHR$(145):VR=PEEK(648)
*256'FTWM
835 OPEN 4,4:PRINT#4'CFGM
840 FOR CL=0 TO 23:QF=0:AS$=MF$
:FOR RO=0 TO 39'IWLQ
845 SC=PEEK(VR+40*CL+RO)'FMR
850 IF SC=34 THEN QF=1-QF'FJGM
855 IF SC<>162 THEN 870'EIQ
860 QF=1-QF:IF QF=1 THEN
AS$=AS$+RV$+QT$:GOTO 900'JAJU
865 AS$=AS$+QT$+RO$:GOTO 900'EQU
870 IF QF=1 AND(SC>=128)THEN SC=SC-128
:GOTO 880'JVXT
875 IF SC>128 THEN SC=SC-128:RF=1
:AS$=AS$+RV$'IBPA
880 IF SC<32 OR SC>95 THEN AS=SC+64
:GOTO 895'ISHT
885 IF SC>31 AND SC<64 THEN AS=SC
:GOTO 895'HQGX
890 IF SC>63 AND SC<96 THEN AS=SC+32
:GOTO 895'ISGU
895 AS$=AS$+CHR$(AS)'DKTU
900 IF RF=1 THEN AS$=AS$+RO$:RF=0'GQK
905 NEXT RO'BCJJ
910 IF QF=0 THEN PRINT#4,
SI$PO$"20"AS$BS$:GOTO 920'FVNM
915 PRINT#4,SI$+PO$+"20"+AS$+QT$BS$'F
RRQ
920 NEXT CL:PRINT#4,SI$:CLOSE 4
:RETURN'ELQJ
950 REM INPUT SUBROUTINE'BPVN
955 CB=0:Q=18:BS$="":AS$=""'ENAS
960 GET AS$:IF AS$=CHR$(13)THEN 975'FMTO
965 Q=164-Q'CFDQ
970 PRINT CHR$(Q)CHR$(32)CHR$(146)
CHR$(157);'FSIR
975 IF BS$=""AND AS$=CHR$(13)THEN 960
:REM PREVENTS ENTERING NULL'HHCD
980 IF BS$=""AND AS$=CHR$(20)THEN 960
:REM NO DELETE IF NO LETTERS ARE
PRESENT'HQMB
985 IF AS$=CHR$(17)OR AS$=CHR$(29)OR
AS$=CHR$(145)OR AS$=CHR$(157)THEN
960'NEQF
990 IF AS$="":OR AS$=","OR
AS$>CHR$(127)OR AS$=CHR$(19)THEN
960'LUPX
995 IF AS$=CHR$(13)THEN PRINT CHR$(32)
:U=0:RETURN'IOUA
1000 IF U=1 THEN 1024'DGXV
1005 PRINT AS$;BS$+AS$'DKAC
1010 L=LEN(BS$)'CFTV
1015 IF AS$=CHR$(20)THEN BS$=LEFT$(BS$,
L-2)'HPYG
1020 GOTO 960'BDOV
1024 IF AS$=""THEN 960'DFGB
1025 IF AS$=CHR$(13)AND BS$<>""THEN
PRINT CHR$(32):U=0:RETURN'LQPK
1030 IF AS$<>CHR$(20)AND ASC(AS$)<45 OR
ASC(AS$)>57 OR AS$>CHR$(127)THEN
960'ODCL
1035 GOTO 1005'BEDC

```

(END)

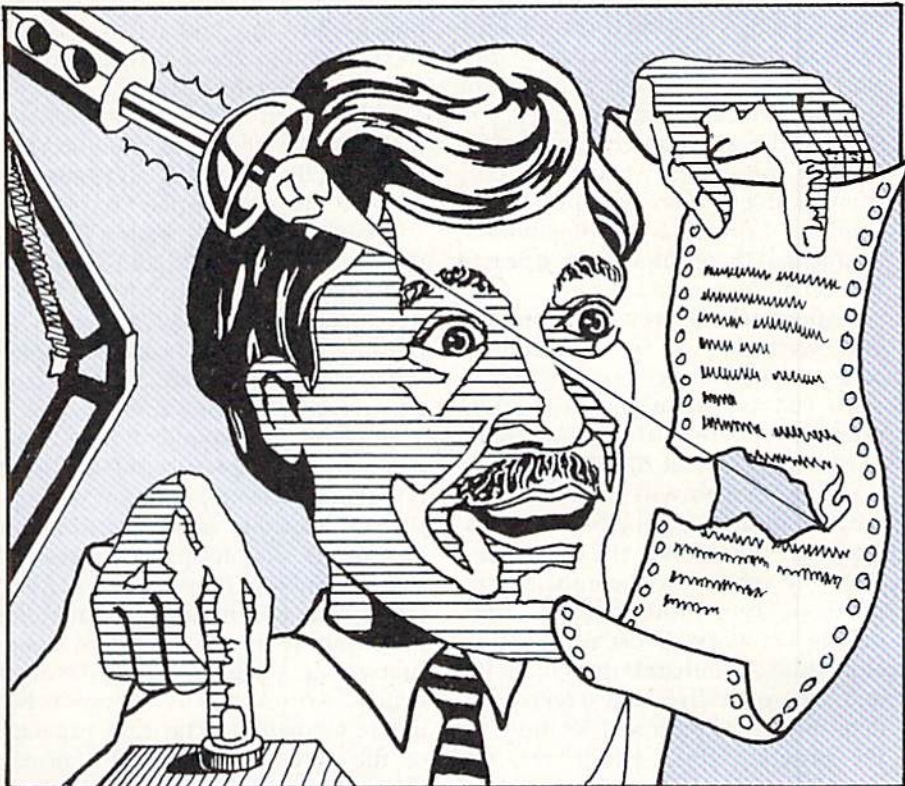
Tech Notes

Technical editor Jim Gracely keeps you abreast of the latest and greatest.

Ergo Systems out of Hayward, California, has a really nice **dot matrix graphic printer** called the **Hush 80**. The "hush" comes from the noise the printer *doesn't* make as it prints, and the 80 from the fact that it uses 80 columns. Though it is a thermal printer, the paper (available from Ergo) is of very good quality. The printer connects to the 64 (or VIC 20, Plus/4, or C-16) with a standard serial port cable (no interface required). I give this printer high marks overall. Ergo has been selling the printer, with one roll of paper and two additional rolls, for \$149.

A second printer, the **Riteman C+**, has crossed my desk from Inforunner of Inglewood, California. This printer is also a direct serial connect. It is a space-age printer with front-loading tractor/friction feed and base supports to keep it about four inches above the table so you can store your paper underneath. The front-load design is combined with the dot matrix head pointing down onto the paper, allowing everything up to a card stock to be used. The speed of the printer is adequate until it hits a reverse character (one pass per reverse character on a line).

The third printer I had a chance to look at is a **daisy wheel model** called the **Elite 5 CD** from Axiom of San Fernando, California. This printer provides a wide range of compatibility with both a direct connect serial cable and a Centronics parallel port. The print speed is a usual ten characters per second, but it has several special features. The secondary address (generally either zero or seven on Commodore printers) can be any value from zero through ten with modes that allow control characters to be printed as mnemonics or ignored entirely, line feeds or no line feeds, and a single mode that prints



only the hex values of all characters output. Although the version I looked at was friction-feed, it did have the necessary gears to indicate that a tractor feed is or will be available. Retail price on this printer is in the \$289 range, and Axiom told me it was backed by a 90-day "no hassle" warranty, in addition to a standard one-year factory warranty.

With the Commodore 128 using both composite (40-column) and RGB (80-column) outputs, the market is going to start filling with **composite/RGB switchable monitors**. The first two I had a chance to see were a 13- and 25-inch from Sanyo. The 13-inch monitor is called the DMC 6600 and provides a nice resolution in both modes. The 25-inch is called the AVM-255 and is really a super monitor (I have one sitting on my desk). Whether you want to use it for watching movies on your VCR or for 80-column word processing, 25 inches is a lot of viewing area. The 25-inch monitor also handles stereo input with an internal amplifier and a pair of speaker jacks (sorry, no speakers included). Both monitors do require you to construct a special cable to use the RGB input, but instructions and the monitor connector are included.

The 6600 is \$349.95 and the 255 is \$799.95.

A new marriage of the **program-of-the-month club** and **electronic magazines** has resulted in a product called the **Gold Disk Series** from Gold Disk, Inc. of Mississauga, Ontario, Canada. The service provides a single, commercial quality program each month along with complete documentation. In addition, there are a couple of nice game programs and a whole slew of regular features, including sound effects, puzzles, reviews and music. At the annual subscription rate of \$99.95, each month's disk costs just a little over \$8.00.

I had a chance to go through the first disk of the series, and it certainly was worth \$8.00. In fact, compared to some of the other products on the market, it was worth a couple of times that amount. The feature program was a full-featured data base, and both of the games included were written in machine language with full arcade level graphics and sound. The additional programs were bits and pieces of various things. The issue also contained an educational department which included a classical puzzle. In all, I highly recommend this series.



WORD PROCESSORS

Continued from pg. 72

interrupt printing or previewing to make changes and then return automatically to the same place when ready to continue. You can use the spelling checker without having to shut off the word processor and load another program. About the only thing it doesn't do is multi-column printing. Control is by mnemonics, augmented by prompts that appear at the top of the screen.

Paperback Writer: This one lets you write on a true 80-column screen. What you see on the screen is what you get when you print it out on paper. There is also a 40-column version on the same disk. In both versions, the screen will scroll horizontally an infinite number of columns. There are two menus, the most effective I've seen, that eliminate any need to remember arcane commands, yet work almost as quickly as embedding commands directly in the text. There are five help screens resident in the program and 38 more on the program disk. Better yet, the menu and help area can be turned off

or on at will, giving 23 lines of text, plus a status line and a TAB scale. In the 80-column version, that amounts to about three-fourths of a page of double-spaced printing. It displays underlined text as underlined on the screen, italics as italic, and boldface as bold. It will display returns or space-markers if you want it to. It alphabetizes lists and adds columns and rows of numbers, although not in as many ways as *PaperClip* will. Because of all these features, *Paperback Writer* is reasonably transparent, yet still quite powerful.

However, if it sounds like the perfect word processor, I should point out that in the 80-column version, the text capacity is limited to about five or six double-spaced pages (although linking files is easy). Also, when you are inserting something into your text, the action is sometimes very sluggish, with pauses of nearly two seconds as the text is being re-formatted. The text capacity of the 40-column version is nearly twice as large, but you must check on

format by scrolling the 40-column screen. To see the full width of your text, you have to save it, load the 80-column version, and then re-load the text. (I might also point out that, despite those drawbacks, I'm writing this article on it.)

Write Now: This comes on cartridge, so it loads instantly. There is no need to swap disks in the drive, and it also works well with files stored on tape. It's also one of the most transparent word processors available. It uses the spatial system of dedicating the top row of keys to control functions. Keyboard overlays identify these function keys and make control much faster than with any menu system. Text entry is the streaming type, but a true 80-column preview display makes the format clear, and on a monitor is legible enough for easy proofreading. Format and printer codes must be embedded as "dot codes," but five resident help screens make this relatively easy.

SkiWriter II: This is also on car-

FOR COMMODORE 128 AND C-64 OWNERS ONLY:

This is just 1 of 15 pages of the newest and biggest Skyles catalog, hot off the press.

We know you'll want this page, in its full 8½ x 11 splendor, and another 14 pages of peripherals, software and books that will make your Commodore 128 or C-64 computer even nicer to live with.

So, if we missed sending you your very own copy within the last few weeks, call us at (800) 227-9998, unless you live in California, in which case call (415) 965-1735.



Skyles Electric Works

231E South Whisman Road
Mountain View, CA 94041

From Skyles Electric Works, the oldest and largest professional specialists in the business.

QUICKSILVER™

Is the fastest IEEE-488 interface available for the Commodore 64. How fast? As fast as the external IEEE-488 device will allow. For example, a program or file will load over four times faster from a Commodore 4040 or 8050 disk drive as compared to a 1541 disk drive. When used with printers speed is only limited by the printer.

QUICKSILVER is transparent. QUICKSILVER does not occupy any program memory. Almost all programs are completely compatible with QUICKSILVER. A word of caution, some IEEE-488 devices have different formats, and 1541 formatted disks are not going to load. Some programs protect the disk by varying the 1541 disk drives. However, for most uses QUICKSILVER is transparent. Plug into the cartridge port. The built-in horizontal IEEE device within 2 meter



IEEE cable. Easy to select which device numbers you want QUICKSILVER to interface to the IEEE bus. Easy to use with almost all programs. Easy to buy, at an amazingly low price, from Skyles Electric Works or your local dealer.

QUICKSILVER, C-128 Cartridge \$129.95
QUICKSILVER, C-64 Cartridge 129.95

FALL
SALE
99.95
99.95

WORD PROCESSORS

tridge and will work with either tape or disk. However, its most interesting feature is that it is both a word processor and a smart terminal, all in one. Most other so-called "integrated" word processor packages oblige you to quit one program and load another before you can use it. With this one, you can move at will from typing to transmitting and back again. You can download a file from another computer and read it immediately, just by making a selection from a menu.

SkiWriter II is simple to operate—and also somewhat simple in its word processing and terminal abilities, since almost nothing is automatic. The preview display is a scrolling 40-column window. There are no macros, no fancy text-manipulating tricks. And the menus, though clear, are slow. Still, this is an interesting compromise and could be very useful.

HomeWord: This is absolutely the easiest word processor to learn and one of the simplest to operate. It uses icon-type menus—pictures at the

bottom of the screen that identify the various selections. (Most people identify pictures more readily than words. The icons are also labeled.) Although the icons cannot be turned off, it is possible to bypass them quickly by typing the appropriate commands. There are two tutorial cassette tapes and a brief, clear manual. Typing is in 40 columns with word wrap. In addition, a small 80-column format map is visible all the time you are typing, and there is a true 80-column preview display.

There are also some disadvantages. The icons take up quite a lot of the screen, leaving only 15 lines for text. Also, the text capacity is small, about the same as the 80-column *Paperback Writer*. And to access the 80-column preview mode takes nearly half a minute of disk operation and another half minute to get back to the typing mode, although this is not such a hindrance because of the constantly updated format map.

WordPro 64: This is the only Commodore 64 word processor I

know of that can do double-column printing. You enter text in one long batch, but during printing, it comes out in two columns, side by side. (It also does single-column printing, of course.) You can also specify book numbering, with the numbers of alternate pages at opposite sides of the page. For checking on the format, it provides a preview map that is 160 columns wide, twice the width provided by any other word processor.

Final Advice

Even the worst word processor will beat a conventional typewriter for most writing or typing jobs. By studying the chart on pages 118-121, however, you should be able to pick out fairly quickly a number of them that appear most likely to fit your needs. Any of them will probably suit you just fine. But hands-on experience is needed if you want to find the one that is *exactly* right for you. The next logical step, therefore, is to try out as many as possible before you buy, to find out how they *feel*. **C**

C-64 & C-128* OWNERS:

Stop playing "Hide-and-Seek" with your Disk software! Let your Commodore 64™ "memory" do all the work for you with **MASTERDISK®**. Easy Manual and Program Menu-Screens make everyone a "pro" in 1 day! Here's a small "PEEK" at SOME of the FULLY-INTEGRATED POWER of PRODUCTIVITY at your fingertips...

- a SORTED Master Catalog of ALL your Disks (even those un-listable "protected" Directories: Names, ID's, File info, etc.)
- Search + List any File/Disk/ID in seconds, automatically, in any of SEVEN WAYS.
- Transfer ML-Programs or Files from Disk to Disk (CATEGORIZE your software)
- Stop disaster before it strikes: change duplicate ID's fast, without total re-copy.
- Restore accidentally-scratched files in a flash, with VERIFICATION that they're OK.
- Works with 1 or 2 Single Disk Drives (1541, MSD, etc.) with or without Printer (Commodore or ASCII).
- Handy-Reference Card for HEX/ASCII/BINARY-TO-DECIMAL VALUE TRANSLATION + FORMULAS, included FREE.
- All this + MUCH MORE, for just \$34.95 (U.S.A.), \$45.95 (Canada)

*MASTERDISK® and MASTERDUAL® are also compatible with the NEW C-128 (in C-64 Mode)!

We ship within 24 hours! Send Money Order or Check to:

INTEGRATED-SOFTWARE SYSTEMS

P.O. Box 1801, Ames, IA 50010
VISA/M.C./C.O.D., Call (515) 233-2992
9 am - 9 pm (Central Time) Mon.-Fri.
Add \$3 Shipping/plus \$2 Foreign, C.O.D.
IA Residents add 4% Sales Tax.



Now YOU too can get the "Software Edge"!

NEW!! - MASTERDUAL®, "Son of MASTERDISK®"...
same power, but with Dual Drive Speed!

- Same Catalog Features as MASTERDISK®
- Same Disk repair functions, too
- For all C-64 & C-128* systems with Dual Disk Drives (4040, MSD, etc.)
- Utilizes all Dual Drive functions for maximum speed and ease of use
- FREE Handy Reference Card for HEX/ASCII/Binary to Decimal Translation
- Experience FULLY-INTEGRATED POWER for just \$29.95 (U.S.A.), \$39.95 (Canada)

IN CANADA: Cricket Distribution Co.,

P.O. Box 953, Cobourg, Ontario, Canada K9A 4W4
VISA/M.C./C.O.D., Call (416) 372-3692
9 am - 6 pm (Eastern Time) Mon.-Fri.
Add \$3 shipping/plus \$2 for C.O.D.
Ontario Residents add 7% Sales Tax

Whether you have tens or hundreds of disks, now YOU can be the MASTER of your TOTAL Software Library!

Commodore 64 Word Processors

Table 2.

The main chart assumes that each word processor listed has at least the features identified in the sidebar as "standard" and many of those in the "full-featured" category.

Exceptions are noted in the right-hand column.

Y = yes
D = Disk
C = Cartridge

			DISPLAY						CONTROL						TEXT ENHANCEMENTS								
			COPYRIGHT	MEDIUM (CARTRIDGE/DISK)	LINE AND COLUMNS	LINE AND COLUMNS	TEXT CAPACITY	WIDTH (MAX)	MENU	MAGNIFIC	SPLIT	OVERLAY	REFERENCE CARD	HELP SCREEN	WRITE/EDIT IN SAME MODE	MENU	EMBEDDED CODES	VISIBLE ON SCREEN	FILE TYPE	LOAD FROM DIRECTORY	LOAD IN FILE (BSC)	NON-DESTRUCTIVE LOAD	TIME (READY TO TYPE) (SEC)
Bank Street Writer Broderbund, Inc. \$49.95	1983	D	19 x 36 word-wrap	page breaks only	"3,000 words"	126	y							y			prg	y		y	88		
Circascript Circadian Software \$39.95	1983	D	24 x 40 streaming	none	39,166	???	y	y				y	y	y			prg		27		40	y	
Creative Writer Creative Software \$49.95	1984	D	24 x 40 word-wrap	59 x 80 format map	28,000	132	y	y				y (on disk)	y	y			prg	y	33		52	y	
Cut & Paste Electronic Arts \$35.00	1983	D	22 x 40 word-wrap	none	29,683	???	y				y		y	y			??	y			208	y	
Easy Script Commodore Business Machines \$54.95		D	24 x 40 streaming	24 x 40 scrolling	30,560	240		y					y	y			seq	y	27	y	87		
Fleet System 2 Professional Software, Inc. \$79.95	1984	D	23 x 40 streaming scroll option	23 x 40 scroll option	16,000	120		y				y (load into extra mem. area)	y	y			usr		33		114		
HomePak (HomeText portion) Batteries Included \$49.95	1984	D	21 x 40 word-wrap	80 map	13,501	160	y	y					y	y	y	y	seq		77	y	110	y	
HomeWord Sierra \$69.95	1983/84	D	15 x 40 word-wrap	24 x 80 true 80 columns	6,900	132	y (icon)	y (option)				y (on disk)	y	y		y (as labels)	??	y	6,900k = 61 sec		109		
Kwik-Write! Datamost, Inc. \$19.95	1984	D	22 x 40 word-wrap scroll option	24 x 40 scrolling	34,545	132	y	y				y (on disk)	y	y	y		prg, seq, usr		14		35	y	
Letter Wizard DataSoft \$74.95	1983	D	20 x 40 word-wrap	none	33,000	???		y			y		y		y	y	seq		36	y	60	y	
Magic Desk I Commodore Business Machines \$49.95	1983	C	15 x 40 streaming	none	???	80	y (icons)					y	y				rel	y			0 (cartridge)		
OmniWriter & OmniSpell Human Engineered Software \$34.95	1983	D	21 x 40 word-wrap (scroll option)	none	34,000	240	(prompts)	y		y	y	y (must load first)	y (special key to insert & delete)	y	y		prg		20	y	84		
The Package (WIP portion) Intelligent Software \$35.00	1983	D	24 x 40 streaming	24 x 40	???	???		y				y					seq		??		22	y	
Paperback Writer Digital Solutions, Inc. \$39.95	1985	D	23 x 40 23 x 80 word-wrap scroll option	same (on-screen text formatting while writing)	15,860 (40) 6,900 (80)	10k 6.9k	y y					y y (memory & disk)	y	y		y	prg, seq	y	36	y	45	y	
PaperClip with Spell Pack Batteries Included \$119.95 (\$89.95 w/o Spell Pack)	1984	D	23 x 40 streaming scroll option	23 x 40 scrolling true 80 column	16,000	250		y					y	y			prg, seq	y	30	y	96	y	

In the "CONTROL" section:

"MNEMONIC" means that you use CTRL keys (eg: CTRL-s) as dedicated function keys. I called them "mnemonics" because generally you have to remember them—as distinct from the next two categories.

"SPATIAL" means that a row of keys is dedicated as function keys. This is a spatial arrangement, rather than the random locations of "mnemonic" function keys. A keyboard overlay identifies the function of each key.

"MENU" means that you control the word processor by making selections from one or more on-screen menus.

FILING AND LOADING				PRINTING				MANUAL				SPECIAL FEATURES										
SAVE PART OF TEXT	UNDO/REDO	MAIL MERGE	CONTENTS	INDEX	REFERENCE SECTION	TUTORIAL	SUM CHART	NUMBER PAGES	KEY CHECK	OTHER SOUNDS	CHANGE COLORS	DELETE TO RIGHT	DELETE BUFFER	MARGIN RELEASE	SPELLING CHECKER/BUILD IN	CALCULATOR	ALPHABETIC	TERMINAL	DATABASE MANAGER	SPEECH/TEXT	LEARNING TIME	MANUAL NEEDED OPTION
y		y	y			y	88		y											av		
			y	y	y	y	36		y											av	y	
y	y	y	y			y	30			y										av		
			y			y	14	y		y										av		
y	y	y	y	y	y	y	150		y		y									long	y	
y	y	y	y	y	y	y	200	y				y	y							av	y	
	y		y		y	y	61	y	y	y					y	y				brief		
y			y	y	y	y	65	y		y		outline format		y						very brief		
	y					y	20		y	y										av		
y	y	y	y	y		y	66	y	y	y				y						av	y	
					y		6	y	y											brief		
y		y	y			y	78	y	y					y						av	y	
		y					on disk											y		av		
	y	y	y	y	y		48	y	y	y		y	y	y	y					fairly brief		
y	y	y	y	y	y	y	127		y		y	y	y	y						fairly long	y	

Continued on Next Page

TAKE CONTROL

Model 5000

- Atari
- Commodore



Model 3000

- Atari
- Commodore



Model 300X

- Atari
- Commodore



Models also available for:

- Apple
- Coleco
- TI 99/4A

competition PRO™

a division of COIN CONTROLS, Inc.
1000A Touhy Avenue
Elk Grove, IL 60007
(312) 228-1810
Telex: 297-108 Coin UR
CALL FOR YOUR NEAREST DEALER

**Call toll free today
800-323-8174**

Commodore 64 Word Processors

Table 2, Continued.

			DISPLAY					CONTROL					TEXT ENHANCEMENTS											
			COPYRIGHT	MEDIUM (CARTRIDGE/DSK)	LINE AND COLUMN	LINE AND COLUMN	TEXT CAPACITY	WIDTH (MAX)	MENU	MINI/MON	SERIAL	OVERLAY	REFERENCE CARD	HELP SCREEN	WRITE/EDIT IN SAME MODE	MENU	EMBEDDED CODES	VISIBLE ON SCREEN	FILE TYPE	LOAD FROM DIRECTORY	LOAD ON FILE (SEC)	NON-DESTRUCTIVE LOAD	TIME READY TO TYPE (SEC)	DRIVE QUIET
Script 64 Richvale Telecommunications Ltd. \$58.00		D	22 x 40 streaming 22 x 80 on-screen formatting	none	25,200 (40) 28,000 (80)	231	Y			Y			Y (disk)	Y	Y			prg	Y		Y	83	Y	
SkilWriter II Pentefice Hall \$69.95	1984	C	21 x 40 word-wrap	21 x 40 scrolling	28,000	99	Y	Y (optional)		Y				Y	Y	Y	Y	seq	Y	27 (40 to SAVE new file)	0 (cartridge)			
Speed Script COMPUTE! Publications, Inc. \$14.95 disk \$ 9.95 book	1985	D	24 x 40 word-wrap	none	43,250	255	Y	Y		Y	Y			Y		Y		prg			Y	21	Y	
Super-text Muse Software \$79.95	1983	D	24 x 40 24 x 80 word-wrap	24 x 40 24 x 80	22,850	133		Y				Y (80 col only)			Y			seq	Y	95	Y	120	Y	
Textomat-64 Abacus Software, Inc. \$39.95	1984	D	22 x 40 streaming	22 x 40 scrolling	???	???	Y							Y	Y			prg		30	Y	105	Y	
Typo 64 Input Systems, Inc. \$58.00	1982	D	22 x 40	none	???	70	Y											usr	Y		61 (8 manual steps)	Y		
Word Commander 64 MMG Micro Software \$29.95	1984	D	23 x 40 word-wrap	23 x 40 scrolling	34,000	???	prompts	Y		Y				Y		Y		prg		23	60			
Word Machine & Name Machine Commodore Business Machines	1982	D	25 x 40 streaming	20 x 39	28,900	???	Y														24 (6 manual steps)	Y		
Word Processor—Professional Mirage Concepts, Inc. \$49.95	1984	D	17 x 40 17 x 80 word-wrap on-screen formatting	none needed	14,000 (40) 9,599 (80)	255		Y		Y				Y		Y		seq		27	Y	98	Y	
WordPro 3 Plus/64 Professional Software, Inc. \$99.95	1982	D	23 x 40 streaming	none	14,080	164		Y						Y		Y		prg		28	Y	66 (4 manual steps)	Y	
WordPro 64 Pro-Line Software Inc. \$49.95	1984	D	23 x 40 word-wrap	23 x 40 scrolling 160 col map	16,360	160		Y						Y		Y	Y	prg	Y	78	Y	88	Y	
The Word Worker Design Enterprises of San Francisco \$49.95	1983	D	25 x 35 streaming	20 x 35	???	130		Y								Y			??	Y	99	Y		
Word Writer Timeworks, Inc. \$49.95	1983	D	21 x 40 word-wrap scroll option	21 x 40 scrolling	???	250	prompts		Y	Y				Y		Y		seq		27	Y	107 (4 manual steps)	Y	
The Write File Tri-Micro \$29.95	1983	D	22 x 37 streaming	none	7,623	77		Y						Y		Y		seq			Y	109	Y	
WRITE NOW! Caraco, Inc. \$44.95	1984	C	24 x 40 streaming	24 x 80 true 80 col	30,712	250			Y	Y			Y	Y		Y		prg		31	Y	0 (cartridge)		
Your Home Office Tri-Micro \$29.95	1983	D	22 x 37 streaming	none	7,623	77			Y				Y	Y				seq			Y	109	Y	

FILING AND LOADING				PRINTING				MANUAL				SPECIAL FEATURES										
SAVE PART OF TEXT	LINKED FILES	MAIL MERGE	CONTENTS	INDEX	REFERENCE SECTION	TUTORIAL	SUM/CASE	NUMBER PAGES	KEY CLICK	OTHER SOUNDS	CHANGE COLORS	DELETE TO RIGHT	DELETE BUFFER	MARGIN RELEASE	SPELLING CHECKER BUILT IN	CALCULATOR	ALPHABETIZE	TERMINAL	DATABASE MANAGER	SPREADSHEET	LEARNING TIME	MANUAL NEEDED OPTION
Y (40 c only)	Y	Y	Y	Y	Y	Y	Y	158													long	Y
			Y	Y				49		Y	Y	Y				Y					brief	
	Y		Y	Y		Y		26 (in a 139 pg book)		Y	Y	Y										
	Y	Y	Y	Y		Y	Y	138		Y				Y							av	
	Y	Y	Y	Y		Y		106		Y				Y							av	Y
				Y				21		Y						Y					av	Y
	Y	Y	Y	Y	Y	Y	Y	36		Y	Y										av	Y
		Y	Y			Y	Y	14		Y											av	
	Y	Y	Y	Y	Y	Y	Y	232	Y	Y	Y	Y		Y							long	Y
	Y	Y	Y	Y	Y		Y	144		Y	Y			Y	Y						long	Y
	Y	Y	Y	Y	Y	Y		74		Y		Y									long	Y
								12													av	
	Y	Y	Y	Y		Y		451		Y	Y			Y	Y						av	Y
	Y		Y					39									Y				av	
	Y	Y	Y	Y	Y	Y		108	Y	Y	Y	Y									fairly brief	
	Y		Y					49											Y		av	

SOFTWARE

**COMMODORE 64tm or
COMMODORE 128tm**

35 PROGRAMS (DISK) — \$12.95

COMMODORE PLUS 4tm
30 PROGRAMS (DISK) — \$15.95

Add \$2.00 shipping & handling
(foreign, except Canada-\$3.00)

selected public domain programs
**GAMES, UTILITIES, BUSINESS
EDUCATION, GRAPHICS & MUSIC**
(DOCUMENTATION INCLUDED)

NEW PRODUCT

Finally, a truly "easy to use"
**PROFESSIONAL SMALL BUSINESS
BOOKKEEPING SYSTEM**
for Commodore Computers (64, 128 & Plus 4)

**GENERAL LEDGER, PAYROLL, & REPORT
GENERATOR PLUS STARTUP and
MAINTENANCE UTILITIES
DETAILED INSTRUCTION MANUAL**

\$24.95

plus \$3.00 shipping & handling
(foreign-\$4.00)

send check or money order to

MADA ENTERPRISES, INC.

**P.O. BOX 1382
BELLEVUE, NE. 68005**

FOR MORE INFORMATION, WRITE DIRECT
OR CIRCLE READER SERVICE NUMBER
COMMODORE 64, 128, and PLUS 4
are trademarks of Commodore Electronics, Ltd.

DELUXE RS232 INTERFACE



Whether you want to communicate with a modem, serial printer, another computer, or any other RS232 device, the Deluxe RS232 Interface is the correct choice. Any comparison will show that it is best Commodore compatible RS232 interface available for any price! The Deluxe RS232 Interface is the culmination of 3 years of working with Commodore users who need an RS232 Interface. It supports all standard RS232 connections (2-B, 12, 20, 22) including Ring Detect and Hi Speed Indicator. Four switches in the RS232 cover allow you to set the unit for virtually any standard RS232 configuration. The unit includes a 3 foot cable with either a male or female DB25 connector (specify which). RS232 plus and minus voltages. Users Manual includes a type-in Basic terminal program, basic program transfer routine, and other examples. Add \$2.00 for shipping. Suggested retail **\$49.95**

PRINTMASTER/S (RS232)

This is an RS232 version of our famous Printmaster+G. It is a serial bus printer interface providing full RS232 signals for an RS232 printer. Supports pins 2-B, 20. Select 300, 600, 1200, 2400, word, and parity. Supports dot graphics and characters on RS232 versions of Epson, Oki, Gorrilla, NEC, and more. Includes 3 ft cable with a male or female connector (specify which). Cassette or external power. Add \$2.50 for shipping. Suggested retail **\$119.95**

100% 128 COMPATIBLE

See your local dealer or

CALL (206) 236-2983

30 day money back guarantee on all products. Visa and MC welcome. Write to us if you wish to be on a special marketing survey mailing list.

DEALERS CALL US!

Omnitronix

P.O. BOX 43-DEPT.C9-MERCER IS., WA 98040

MUST LIQUIDATE!

LIMITED INVENTORY OF ULTRA FAMOUS 64K COMPUTERS

AT FAR BELOW DEALER COST!

A GREAT GIFT
FOR STUDENTS!

Factory
Reconditioned
with Warranty.

Monitor is not
available. See footnote.*

**Millions sold
at regular prices . . . and
STILL being sold at regular prices!**

**Sorry, we're NOT permitted to print the brand name.
But if you phone us, all details can be divulged.**

Phone Toll-Free: 1-800-328-0609

PLENTY OF SOFTWARE AVAILABLE! Thousands upon thousands of programs are available for it from computer stores across the nation.

FOR BUSINESS! This is an ideal entry level business computer. Use the computer for word processing, data base, accounts payable/receivable, general ledger, payroll, inventory, tax accounting, spreadsheets, mailing lists . . . and much, MUCH more!

FOR EDUCATION! Perfect for everyone from Ph.D. candidates to preschool youngsters. A vast number of programs are available to challenge and educate the mind.

FOR HOME! Use for analysis of personal investments, income tax planning, storage of recipes and household data. And of course, there are hundreds of exciting, fast-paced arcade games available!

Units sold **SINGLY** or
in any combination
you desire.

	Original List Price	YOUR COST
64K COMPUTER Item H-750-63553-00	\$200.00	\$99
DISK DRIVE Item H-750-63553-01	\$269.00	\$148
PRINTER Item H-750-63831-00	\$200.00	\$118
TOTAL	\$669.00	\$365

We reserve the
right to limit
quantity
purchases.

**Factory Reconditioned
With Factory Warranty.**

*NOTE: If you do not have a monitor, you can use your TV as a display unit. The computer comes already to be hooked up to your TV.

Credit card customers can order by phone.
24 hours a day.
7 days a week



Toll-Free: 1-800-328-0609

Your check is welcome!
No delays in orders paid by check.

C.O.M.B. CO.®
Authorized Liquidator
14605 28TH AVENUE NORTH
MINNEAPOLIS, MINNESOTA 55441-3397

COMPUTER

64K RAM. 20K ROM standard (includes operating systems and BASIC interpreter). Text characters. High resolution graphics. 320 x 200 pixels. Music synthesizer produces 3 independent voices, each with a range of 9 octaves.

Typewriter keyboard with 66 keys for upper and lower case letters, numerals, symbols, reverse characters. 2 cursor control keys. 4 function keys, programmable to 8. Input/output ports for user, serial, ROM cartridge, 2 joystick/paddles, video, cassette drive interface. 16 background, border, character colors.

DISK DRIVE

Intelligent, high-speed. External 5 1/4" floppy diskette recorder. 2K RAM, 16K ROM. Maximum storage of 170K formatted data; 35 tracks. Uses single sided, single density disk. Serial interface. Second serial port for chaining second drive or printer. Data transfer rate of 400 bytes per second.

DOT MATRIX PRINTER

Bi-directional 6x7 dot matrix impact printer. 60 characters per second. Has upper and lower case letters, numerals and symbols. All PET graphic characters. Standard friction feed. Maximum of 80 columns width, dot addressable. CBM ASCII character codes. Original plus maximum of two copies. Paper width: 4.5" to 8.5". Size: 13"W x 8"D x 3 1/4"H. Weight: 6 1/2 lbs. Power requirements: 120 volts AC, 60 Hz.

C.O.M.B. CO.® Item H-750
14605 28th Ave. N./Minneapolis, MN 55441-3397

Send the following items. (Indicate quantity of each):
— 64K Computer(s) Item H-750-63553-00 at \$99 each plus \$8 each for shipping, handling.
— Disk Drive(s) Item H-750-63553-01 at \$148 each plus \$8 each for shipping, handling.
— Printer(s) Item H-750-63831-00 at \$118 each plus \$7 each for shipping, handling.

(Minnesota residents add 6% sales tax. Allow 3-4 weeks for delivery. Sorry, no C.O.D. orders.)

☐ My check or money order is enclosed. (No delays in processing orders paid by check, thanks to TeleCheck.)

Charge: ☐ MasterCard® ☐ VISA

Acct. No. _____ Exp. _____

PLEASE PRINT CLEARLY

Name _____

Address _____

City _____

State _____ ZIP _____

Phone _____

Sign here _____

RESET MASTER

Continued from Pg. 96

You go about your hacking until you experience a lockup. You touch the red button on top of the Reset Master, the screen clears for a second or two, and the opening "BYTES FREE" message appears as if the machine had just been turned on. Stay calm at this point. For the heck of it, try to list the program now. Nothing, right? Don't worry about it. Type in SYS 50000:CLR (or whatever SYS number is appropriate for your machine) and hit a RETURN. Now list it. Bingo—there it is.

Now you can go through the program to debug it or try re-running it again to see where the problem is. The "Renew" program will remain in memory until you actually shut the machine off. Of course, if you don't load the program in at the start of each session, it can't be used. For this reason, loading and running "Renew" should be your first order of business upon turning the machine on.

The SYS number given to you when the "Renew" program is run represents the starting address of the machine language. This location can be changed if it conflicts with your programming requirements. Changing the starting address is explained in the REM statements of "Renew." Touching the reset button on the machine is also a convenient means of killing a program you have running without having to shut the machine off.

The Reset Master is warranted for 90 days from the date of purchase against defects in materials and workmanship. It's a nifty little gizmo that packs a lot of features into a small package. It works well, is simple to use, is well made, and does everything it claims to do—what more could you ask? Don't forget, it also extends your usable peripheral range by two feet and gives you an additional serial port. These bonus convenience features add to an already value-packed unit.

If you've ever experienced the frustration of a program crash, you'll want to get yourself a Reset Master right away. If you've never had a crash, Reset Master can save you from this highly unpleasant experience for a very reasonable cost. Since first installing mine, I've come to regard it as standard operating equipment—you will too.

G

HOW TO ENTER PROGRAMS

The programs which appear in this magazine have been run, tested and checked for bugs and errors. After a program is tested, it is printed on a letter quality printer with some formatting changes. This listing is then photographed directly and printed in the magazine. Using this method ensures the most error-free program listings possible.

Whenever you see a word inside brackets, such as [DOWN], the word represents a keystroke or series of keystrokes on the keyboard. The word [DOWN] would be entered by pressing the cursor-down key. If multiple keystrokes are required, the number will directly follow the word. For example, [DOWN4] would mean to press the cursor-down key four times. If there are multiple words within one set of brackets, enter the keystrokes directly after one another. For example, [DOWN, RIGHT 2] would mean to press the cursor-down key once and then the cursor-right key twice.

In addition to these graphic symbols, the keyboard graphics are all represented by a word and a letter. The word is either SHIFT or CMD and represents the SHIFT key or the Commodore key. The letter is one of the letters on the keyboard. The combination [SHIFT E] would be entered by holding down the SHIFT key and pressing the E. A number following the letter tells you how many times to type the letter. For example, [SHIFT A4,CMD B3] would mean to hold the SHIFT key and press the A four times, then hold down the Commodore key and press the B three times.

The chart on this page tells you the keys to press for any word or words inside brackets. Refer to this chart whenever you aren't sure what keys to press. The little graphic next to each keystroke shows you what you will see on the screen.

SYNTAX ERROR

This is by far the most common error encountered while entering a program. Usually (sorry folks) this means that you have typed something incorrectly on the line the syntax error refers to. If you get the message "Syntax Error Break In Line 270", type LIST 270 and press RE-

TURN. This will list line 270 to the screen. Look for any non-obvious mistakes like a zero in place of an O or vice-versa. Check for semicolons and colons reversed and extra or missing parenthesis. All of these things will cause a syntax error.

There is only one time a syntax error will tell you the 'wrong' line to look at. If the line the syntax error refers to has a function call (i.e., FN A(3)), the syntax error may be in the line that defines the function, rather than the line named in the error message. Look for a line near the beginning of the program (usually) that has DEF FN A(X) in it with an equation following it. Look for a typo in the equation part of this definition.

ILLEGAL QUANTITY ERROR

This is another common error message. This can also be caused by a typing error, but it is a little harder to find. Once again, list the line number that the error message refers to. There is probably a poke statement on this line. If there is, then the error is referring to what is trying to be poked. A number must be in the range of zero to 255 to be poke-able. For example, the statement POKE 1024,260 would produce an illegal quantity error because 260 is greater than 255.

Most often, the value being poked is a variable (A,X,...). This error is telling you that this variable is out of range. If the variable is being read

from data statements, then the problem is somewhere in the data statements. Check the data statements for missing commas or other typos.

If the variable is not coming from data statements, then the problem will be a little harder to find. Check each line that contains the variable for typing mistakes.

OUT OF DATA ERROR

This error message is always related to the data statements in a program. If this error occurs, it means that the program has run out of data items before it was supposed to. It is usually caused by a problem or typo in the data statements. Check first to see if you have left out a whole line of data. Next, check for missing commas between numbers. Reading data from a page of a magazine can be a strain on the brain, so use a ruler or a piece of paper or anything else to help you keep track of where you are as you enter the data.

OTHER PROBLEMS

It is important to remember that the 64 and the PET/CBM computers will only accept a line up to 80 characters long. The VIC 20 will accept a line up to 88 characters long. Sometimes you will find a line in a program that runs over this number of characters. This is not a mistake in the listing. Sometimes programmers get so carried away crunching programs that they use abbreviated commands to get more than 80 (or 88)

CHART OF SPECIAL CHARACTER COMMANDS

 "[HOME]" = UNSHIFTED CLR/ HOME	 "[PURPLE]" = CONTROL 5	 "[F1]" = F1
 "[CLEAR]" = SHIFTED CLR/HOME	 "[GREEN]" = CONTROL 6	 "[F2]" = F2
 "[DOWN]" = CURSOR DOWN	 "[BLUE]" = CONTROL 7	 "[F3]" = F3
 "[UP]" = CURSOR UP	 "[YELLOW]" = CONTROL 8	 "[F4]" = F4
 "[RIGHT]" = CURSOR RIGHT	 "[ORANGE]" = COMMODORE 1	 "[F5]" = F5
 "[LEFT]" = CURSOR LEFT	 "[BROWN]" = COMMODORE 2	 "[F6]" = F6
 "[RVS]" = CONTROL 9	 "[L RED]" = COMMODORE 3	 "[F7]" = F7
 "[RVOFF]" = CONTROL 0	 "[GRAY1]" = COMMODORE 4	 "[F8]" = F8
 "[BLACK]" = CONTROL 1	 "[GRAY2]" = COMMODORE 5	 "[POUND]" = ENGLISH POUND
 "[WHITE]" = CONTROL 2	 "[L GREEN]" = COMMODORE 6	 "[SHIFT]" = PI SYMBOL
 "[RED]" = CONTROL 3	 "[L BLUE]" = COMMODORE 7	 "[UP ARROW]" = UP ARROW
 "[CYAN]" = CONTROL 4	 "[GRAY3]" = COMMODORE 8	

GRAPHIC SYMBOLS WILL BE REPRESENTED AS EITHER THE LETTERS SHFT (SHIFT) AND A KEY ("[SHFT Q,SHFT J,SHFT D,SHFT S]") OR THE LETTERS CMDR (COMMODORE) AND A KEY ("[CMDR Q,CMDR G,CMDR Y,CMDR H]"). IF A SYMBOL IS REPEATED, THE NUMBER OF REPETITIONS WILL BE DIRECTLY AFTER THE KEY AND BEFORE THE COMMA ("[SPACE3,SHFT S4,CMDR M2]")

characters on one line. You can enter these lines by abbreviating the commands when you enter the line. The abbreviations for BASIC commands are on pages 133-134 of the VIC 20 user guide and 130-131 of the Commodore 64 user's guide.

If you type a line that is longer than 80 (or 88) characters, the computer will act as if everything is ok, until you press RETURN. Then, a syntax error will be displayed.

THE PROGRAM WON'T RUN!!

This is the hardest of problems to resolve; no error message is displayed, but the program just doesn't run. This can be caused by many small mistakes typing a program in. First check that the program was written for the computer you are using. Check to see if you have left out any lines of the program. Check each line of the program for typos or missing parts. Finally, press the RUN/STOP key while the program is 'running'. Write down the line the program broke at and try to follow the program backwards from this point, looking for problems.

IF ALL ELSE FAILS

You've come to the end of your rope. You can't get the program to run and you can't find any errors in your typing. What do you do? As always, we suggest that you try a local user group for help. In a group of even just a dozen members, someone is bound to have typed in the same program.

If you do get a working copy, be sure to compare it to your own version so that you can learn from your errors and increase your understanding of programming.

If you live in the country, don't have a local user group, or you simply can't get any help, write to us. If you do write to us, include the following information about the program you are having problems with:

The name of the program

The issue of the magazine it was in

The computer you are using

Any error messages and the line numbers

Anything displayed on the screen

A printout of your listing (if possible)

Send your questions to:

Commodore Microcomputers

1200 Wilson Drive

West Chester, PA 19380

ATTN: Program Problem

How to Use the Magazine Entry Program

The Magazine Entry Program on page 125 is a machine language program that will assist you in entering the programs in this magazine correctly. It is for use with the Commodore 64 only and was written by Mark Robin using the IEA Editor/Assembler. Once the program is in place, it works its magic without you having to do anything else. The program will not let you enter a line if there is a typing mistake on it, and better yet, it identifies the kind of error for you.

Getting Started

Type in the Magazine Entry Program carefully and save it as you go along (just in case). Once the whole program is typed in, save it again on tape or disk. Now RUN the program. The word POKING will appear on the top of the screen with a number. The number will increment from 49152 up to 50052, and just lets you know that the program is running. If everything is ok, the program will finish running and end. Then type NEW. If there is a problem with the data statements, the program will tell you where to look to find the problem.

Once the program has run, it is in memory ready to go. To activate the program, type SYS49152 and press RETURN. When the READY prompt is displayed, type TEST and press RETURN. You are now ready to enter the programs from the magazine.

Typing the Programs

All the program listings in this magazine that are for the 64 have an apostrophe followed by four letters at the end of the line (i.e., 'ACDF). The apostrophe and letters *should* be entered along with the rest of the line. This is a checksum that the Magazine Entry Program uses.

Enter the line and the letters at the end and then press RETURN, just as you normally would.

If the line is entered correctly, a bell is sounded and the line is entered into the computer's memory (without the characters at the end).

If a mistake was made while entering the line, a noise is sounded and an error message is displayed. Read the error message, then press any key to erase the message and correct the line.

IMPORTANT

If the Magazine Entry Program sees a mistake on a line, it *does not* enter that line into memory. This makes it impossible to enter a line incorrectly.

Error Messages and What They Mean

There are six error messages that the Magazine Entry Program uses. Here they are, along with what they mean and how to fix them.

NO CHECKSUM: This means that you forgot to enter the apostrophe and the four letters at the end of the line. Move the cursor to the end of the line you just typed and enter the checksum.

QUOTE: This means that you forgot (or added) a quote mark somewhere in the line. Check the line in the magazine and correct the quote.

PARENTHESIS: This means that you forgot (or added) a parenthesis somewhere in the line. Check the line in the magazine again and correct the parenthesis.

KEYWORD: This means that you have either forgotten a command or spelled one of the BASIC keywords (GOTO, PRINT...) incorrectly. Check the line in the magazine again and check your spelling.

OF CHARACTERS: This means that you have either entered extra characters or missed some characters. Check the line in the magazine again. This error message will also occur if you misspell a BASIC command, but create another keyword in doing so. For example, if you misspell PRINT as PRONT, the 64 sees the letter P and R, the BASIC keyword ON and then the letter T. Because it sees the keyword ON, it thinks you've got too many characters, instead of a simple misspelling. Check spelling of BASIC commands if you can't find anything else wrong.

UNIDENTIFIED: This means that you have either made a simple spelling error, you typed the wrong line number, or you typed the checksum incorrectly. Spelling errors could be the wrong number of spaces inside quotes, a variable spelled wrong, or a word misspelled. Check the line in the magazine again and correct the mistake.

C

Magazine Entry Program

The Magazine Entry Program is available on disk, along with the other programs in this magazine, for \$9.95. To order, contact Loadstar at 1-800-831-2694.

```

1 PRINT "[CLEAR]POKING-";
5 P=49152:REM $C000
10 READ A$:IF A$="END"THEN 80
20 L=ASC(MID$(A$,2,1))
30 H=ASC(MID$(A$,1,1))
40 L=L-48:IF L>9 THEN L=L-7
50 H=H-48:IF H>9 THEN H=H-7
60 PRINT"[HOME,RIGHT12]"P;
70 B=H*16+L:POKE P,B:T=T+B:P=P+1
  :GOTO 10
80 IF T<>103233 THEN PRINT"MISTAKE IN
  DATA --> CHECK DATA STATEMENTS":END
90 PRINT"DONE":END
1000 DATA 4C,23,C0,00,00,00,00,00
1001 DATA 00,00,00,00,00,00,00,00
1002 DATA 00,58,C1,5E,C1,66,C1,76
1003 DATA C1,83,C1,8F,C1,EA,EA,EA
1004 DATA 4C,83,C0,A2,05,BD,1D,C0
1005 DATA 95,73,CA,10,F8,60,A0,02
1006 DATA B9,00,02,D9,3C,C1,D0,0B
1007 DATA 88,10,F5,A9,01,8D,10,C0
1008 DATA 4C,1F,C1,60,A0,03,B9,00
1009 DATA 02,D9,38,C1,D0,E0,88,10
1010 DATA F5,A9,00,8D,10,C0,4C,1F
1011 DATA C1,60,A0,03,B9,00,02,D9
1012 DATA 34,C1,D0,E0,88,10,F5,A0
1013 DATA 05,B9,A2,E3,99,73,00,88
1014 DATA 10,F7,A9,00,8D,18,D4,4C
1015 DATA 1F,C1,E6,7A,D0,02,E6,7B
1016 DATA 4C,79,00,A5,9D,F0,F3,A5
1017 DATA 7A,C9,FF,D0,ED,A5,7B,C9
1018 DATA 01,D0,E7,20,5A,C0,AD,00
1019 DATA 02,20,A3,C0,90,DC,A0,00
1020 DATA 4C,EA,C1,C9,30,30,06,C9
1021 DATA 3A,10,02,38,60,18,60,C8
1022 DATA B1,7A,C9,20,D0,03,C8,D0
1023 DATA F7,B1,7A,60,18,C8,B1,7A
1024 DATA F0,35,C9,22,F0,F5,6D,05
1025 DATA C0,8D,05,C0,AD,06,C0,69
1026 DATA 00,8D,06,C0,4C,BD,C0,18
1027 DATA 6D,07,C0,8D,07,C0,90,03
1028 DATA EE,08,C0,EE,0B,C0,60,18
1029 DATA 6D,0A,C0,8D,0A,C0,90,03
1030 DATA EE,09,C0,EE,0C,C0,60,0A
1031 DATA A8,B9,11,C0,85,FB,B9,12
1032 DATA C0,85,FC,A0,00,A9,12,20
1033 DATA D2,FF,B1,FB,F0,06,20,D2
1034 DATA FF,C8,D0,F6,20,54,C3,20
1035 DATA 7E,C3,20,E4,FF,F0,FB,A0
1036 DATA 1B,B9,3F,C1,20,D2,FF,88
1037 DATA 10,F7,68,68,A9,00,8D,00
1038 DATA 02,4C,74,A4,4B,49,4C,4C
1039 DATA 54,45,53,54,41,44,44,91
1040 DATA 91,0D,20,20,20,20,20,20
1041 DATA 20,20,20,20,20,20,20,20
1042 DATA 20,20,20,20,20,20,91,0D
1043 DATA 51,55,4F,54,45,00,4B,45
1044 DATA 59,57,4F,52,44,00,23,20
1045 DATA 4F,46,20,43,48,41,52,41
1046 DATA 43,54,45,52,53,00,55,4E
1047 DATA 49,44,45,4E,54,49,46,49
1048 DATA 45,44,00,4E,4F,20,43,48
1049 DATA 45,43,4B,53,55,4D,00,50
1050 DATA 41,52,45,4E,54,48,45,53
1051 DATA 49,53,00,C8,B1,7A,D0,FB
1052 DATA 84,FD,C0,09,10,03,4C,C7
1053 DATA C1,88,88,88,88,88,B1,7A
1054 DATA C9,27,D0,13,A9,00,91,7A
1055 DATA C8,A2,00,B1,7A,9D,3C,03
1056 DATA C8,E8,E0,04,D0,F5,60,4C
1057 DATA F2,C2,A0,00,B9,00,02,99
1058 DATA 40,03,F0,F2,C8,D0,F5,A0
1059 DATA 00,B9,40,03,F0,E8,99,00
1060 DATA 02,C8,D0,F5,20,D7,C1,4C
1061 DATA 56,C2,A0,0B,A9,00,99,03
1062 DATA C0,8D,3C,03,88,10,F7,A9
1063 DATA 80,85,02,20,1B,C3,A0,00
1064 DATA 20,9B,C1,20,CA,C1,20,31
1065 DATA C2,E6,7A,E6,7B,20,7C,A5
1066 DATA A0,00,20,AF,C0,F0,CD,24
1067 DATA 02,F0,06,20,D7,C0,4C,12
1068 DATA C2,C9,22,D0,06,20,BC,C0
1069 DATA 4C,12,C2,20,E7,C0,4C,12
1070 DATA C2,A0,00,B9,00,02,20,A3
1071 DATA C0,C8,90,0A,18,6D,69,C0
1072 DATA 8D,09,C0,4C,33,C2,88,A2
1073 DATA 00,B9,00,02,9D,00,02,F0
1074 DATA 04,E8,C8,D0,F4,60,18,AD
1075 DATA 0B,C0,69,41,8D,0B,C0,38
1076 DATA AD,0C,C0,E9,19,90,06,8D
1077 DATA 0C,C0,4C,60,C2,AD,0C,C0
1078 DATA 69,41,8D,0C,C0,AD,05,C6
1079 DATA 6D,07,C0,48,AD,06,C0,6D
1080 DATA 08,C0,8D,0E,C0,68,6D,0A
1081 DATA C0,8D,0D,C0,AD,0E,C0,6D
1082 DATA 09,C0,8D,0E,C0,38,E9,19
1083 DATA 90,06,8D,0E,C0,4C,96,C2
1084 DATA AD,0E,C0,69,41,8D,0E,C0
1085 DATA AD,0D,C0,E9,19,90,06,8D
1086 DATA 0D,C0,4C,AB,C2,AD,0D,C0
1087 DATA 69,41,8D,0D,C0,A0,01,AD
1088 DATA 0B,C0,CD,3C,03,D0,20,C8
1089 DATA AD,0C,C0,CD,3D,03,D0,17
1090 DATA C8,AD,0D,C0,CD,3E,03,D0
1091 DATA 0E,AD,0E,C0,CD,3F,03,D0
1092 DATA 06,20,64,C3,4C,7A,C0,AD
1093 DATA 10,C0,D0,11,98,48,68,4C
1094 DATA F7,C0,AD,10,C0,F0,01,60
1095 DATA A9,04,4C,F7,C0,A4,FD,A9
1096 DATA 27,91,7A,A2,00,C8,BD,0B
1097 DATA C0,91,7A,C8,E8,E0,04,D0
1098 DATA F5,A9,00,91,7A,20,64,C3
1099 DATA 4C,7A,C0,A0,00,B9,00,02
1100 DATA F0,11,C9,28,D0,03,EE,03
1101 DATA C0,C9,29,D0,03,EE,04,C0
1102 DATA C8,D0,EA,AD,03,C0,CD,04
1103 DATA C0,D0,01,60,A9,05,4C,F7
1104 DATA C0,A9,20,8D,00,D4,8D,01
1105 DATA D4,A9,09,8D,05,D4,A9,0F
1106 DATA 8D,18,D4,60,20,41,C3,A9
1107 DATA 81,20,77,C3,A9,80,20,77
1108 DATA C3,4C,71,C3,20,41,C3,A9
1109 DATA 11,20,77,C3,A9,10,20,77
1110 DATA C3,A9,00,8D,04,D4,60,8D
1111 DATA 04,D4,A2,70,A0,03,88,D0
1112 DATA FD,CA,D0,FA,60,END

```


USER GROUPS

Commodore user groups nationwide and around the world provide invaluable assistance to Commodore computerists. If you are looking for people who share your computing interests, or if you need help getting started with your computer, contact the group near you.

This list is compiled from groups who responded to a survey conducted by Pete Baczor, Commodore's user group coordinator. If you would like your group to appear here, or if you need information about Commodore's user group support, contact Pete at Commodore Business Machines, 1200 Wilson Drive, West Chester, PA 19380.

ALABAMA

Birmingham
Birmingham Commodore
Computer Club
Harry Jones
4845 Avenue V Lot 7-B—35208

Enterprise
Wiregrass Micro-Computer
Society
William H. Brown
109 Key Bend Rd.—36330

Mobile
Commodore Club of Mobile
Tom Wyatt
3668-H Rue Maison—36608

Pinson
Commodore Club—South
William J. Freeman
P.O. Box 324—35126

Scottsboro
Scottsboro C-64 Users' Group
Richard Radon
Rt. 5, Box 255—35768

ALASKA

Calgary
Calgary Commodore
Users Group
Lloyd Norman
810 Canfield Way SW—T2W 1K1

Anchorage
Alaska 64 Commodore
Computer Club
Doug Gannon
P.O. Box 6043—99502

Ketchikan
First City Users Group
Jim Llanos
P.O. Box 6002—99901

Sitka
Sitka Commodore Users Group
Dennis Lanham
P.O. Box 2204—99835

ARIZONA

Chandler
Arizona VIC & 64 Users
Thomas Monson
904 W. Mariboro Cir.—85224

Globe
Gila Hackers
Paul R. Machala
Rt. 1, Box 34—85501

Phoenix
Phoenix Arizona Commodore
Club
Leslie A. Roberts
P.O. Box 34905—85067

Sierra Vista
Thunder Mountain Commodore
Users Gp
Jeff Tyler
P.O. Box 1796—85636

Tucson
Catalina Commodore
Computer Club
Mike LaPaglia
3371 S. Mormon Dr.—85730

ARKANSAS

Conway
Commodore/PET Users Club
Geneva Bowlin
Davis Street—72032

Russellville
Russellville Commodore
Users Group
Bob Brazel
401 S. Arlington Dr.—72801

CALIFORNIA

Altadena
Cactus Communicator
P.O. Box 1277—91701

Arcadia
Pasadena Commodore
Computer Club
Ernie McDonald
P.O. Box 1163—91006

Auburn
Auburn Commodore
Computer Club
Pat Strub
11210 Mira Loma Dr.—95603

Baldwin Park
Cal Poly Commodore Users
Group
David Dietzel
14617 1/2 Ramona Blvd.—91706

Bellflower
Club 64
Robert Johnson
14944 Bayou Ave.—90706

Chatsworth
San Fernando Valley
Commodore Users Group
Tom Lynch
21208 Nashville—91311

Clovis
Fresno 64 Users
Greg Edwards
091 W. 9th #203—93612

Concord
Diablo Valley Commodore
Users Group
Dean Steichen
P.O. Box 27155—94520

Costa Mesa
C Tech Users of Orange County
R. Stevenson
P.O. Box 1497—92626

Cupertino
PUG of Silicon Valley
Marvin Vander Kool
22355 Rancho Ventura—95014

Danville
Danville Users Group
Kent E. Davis
185 Front St., Suite 106—94526

Hollywood
Hollywood Commodore
Users Group
Martin Blackwell
733 N. Ridgewood Blvd.—90038

Livermore
PALS
Jo Johnson
886 South K—94550

Los Osos
San Luis Obispo Commodore
Comp. Cl.
Gary Bissell
1766 9th Street—93402

Nevada City
C64 Users Group
Gerry Frederici
11614 Red Dog Road—95959

Ojai
64/20 Club
Greg Burns
215 N. Fulton St.—93023

Oxnard
CIVIC 64
Nathan Okum
120 W. Magnolia Ave.—93030

Pasadena
P.C.A.C.C.
Brian Klotz
1135 Coronet Ave.—91107

San Carlos
Peninsula Commodore
Users Group
Timothy Avery
543 Old County Rd.—94070

San Francisco
PET on the AIR
Bola Lowe
525 Crestline Dr.—94132

San Ysidro
South Bay Commodore 64
Users Group
Jose M. Gallego
P.O. Box 3193—92073

Santa Maria
Central Coast Commodore
User Group
Gilbert F. Vela
4237 Plumeria Ct.—93455

Santa Monica
Commodore 64 West
Don Campbell
P.O. Box 406—90406-0406

Santa Rosa
Santa Rosa Commodore 64
Users Group
Garry Palmer
333 E. Robles Ave.—95407-7925

Stockton
Stockton Commodore
Users Group
Rita McCann
2929 Calariva Dr.—95204

COLORADO

Aspen
Rocky Mountain Commodore
Club
Ray Brooks
P.O. Box 377—81612

Denver
Colorado Commodore Computer
Club
Royce Mitchell
9400 Elm Ct. #6078—80221

Grand Junction
Western Slope Commodore
Users Group
Ralph D'Andrea
P.O. Box 4142—81502

CONNECTICUT

Colchester
Computer Users Group
Liz Rafolowski
Halls Hill Road—06415

Danbury
Fairfield County Commodore
User Gp
Kenneth H. Hottes
P.O. Box 212—06810

East Hartford
Hartford County Commodore
User Gp
R. Curtiss
P.O. Box 8553—06018

Enfield
Northern CT Commodore Club
Mike Levesque
3 Marble St.—06082

Hampton
Commodore East Computer
Users Group
Ernest Julian
165 B.S. Bigelow Rd.—06247

Mystic
C64 Users Group of New London
A. Estes
57 Fishtown Ln.—06355

Stamford
Stamford Commodore
Users Group
Stan Czernel
P.O. Box 1337—06902

Stratford
Commodore User Group of
Stratford
Dan Kern-Ekins
P.O. Box 1213—06497

West Haven
U of New Haven Microcomputer
Club
M. McConeghy
U of New Haven, 300 Orange
Ave.—06516

DELAWARE

Felton
Diamond State Users Group
Michael Butler
P.O. Box 892—19943

Newark
Newark Commodore Users
Group
Bob Taylor
210 Durso Dr.—19711

FLORIDA

Avon Park
CHIPS Users Group
Gerald Klimczak
P.O. Box 3063—33825

Bradenton
Manasota Commodore
Users Group
Bob Bronson
916 E. 35th Ave. Dr.—33508

Brandon
Brandon Users Group
Paul A. Daugherty
108 Anglewood Dr.—33511

Clearwater
Clearwater Commodore Club
Gary B. Gould
1532 Lemon Street—33516

Cocoa
El shift-oh
Mike Schnoke
P.O. Box 548—32922-0548

Eaton Park
VIC/64 Heartland User Group—
Lakeland
Randall Lipham
P.O. Box 912—33840

Gainesville
Gainesville Commodore
Users Group
M. Drew Hurley
P.O. Box 14716—32604

Jacksonville
UNF Commodore Computer
Club
Jay S. Huebner
University of North Florida—
32216

Lutz
VIC/64 Heartland Users—Tampa
Tom Keough
14806 Morning Dr.—33549

MacDill AFB
South Tampa Commodore 64
Users Group
Ronald S. Clement
736F Second Dr.—33621

Miami
Miami 2064
Jim Luftman
12911 SW 49th St.—33175

North Miami Beach
Commodore Educators User
Group—North
Robert Figueroa
16330 NE 2nd Ave.—33162

Ocala
Tri-County Commodore
Users Group
Don Vanderventer
P.O. Box 1151—32671

Orlando
Central Florida Commodore
Users Group
Thurman Lawson
P.O. Box 7326—32854

Palm Harbor
Suncoast 64s
Curtis J. Miller
2419 US 19 North—33563

Panama City
Bay Commodore Users Group
Doug Shipall
P.O. Box 3187—32401

Pensacola
Commodore Advantage
Deanna Owens
P.O. Box 18490—32523

Pensacola
Commodore Users Group of
Pensacola
Debbie Johnston
P.O. Box 3533—32506

Plantation
Suburban 64 Users Group
Ken Partridge
1360 SW 82nd Ter. Apt #625—
33324

Sanibel
Sanibel Commodore VIC
Phil Belanger
1119 Periwinkle Box 73—33957

Shalimer
Ft. Walton Beach Commodore
User Group
Jim Moore
P.O. Box 3—32549

Tamarac
Broward Commodore
Users Group
Lewis Horn
P.O. Box 25794—33320

Tavares
Triangle Educational Users
Group
John Zeigler
P.O. Box 326—32778

Zephyrhill
East Pasco Commodore
Users Group
P.J. Bryden
1836 Sandy Road—34248

GEORGIA

Albany
Albany CBM Amateur
Computerist
David L. Via
P.O. Box 5461—31706

Atlanta
VIC-tims
Earl Dobney
P.O. Box 467052—32346

Brunswick
Golden Isles Commodore Users
Richard L. Young
135 Sherwood Forest Cir.—
31520

College Park
Commodore Format
Gregory Young
2804 Camp Creek Pkwy.—30337

Morrow
CCC 64 UG
David Padett
P.O. Box 842—30260

Oakwood
NE Georgia Commodore
Users Group
Randy Shuler
Route #2, Box 226—30566

USER GROUPS

Riverdale
Clayton County C64 Users Group
Joyce Jay
527 Wanelyn Way—30274
Stowe Mountain
Atlanta C64 Users Group
Ronald Lisoski
1767 Big Valley Lane—30083

IDAHO

Coeur d'Alene
Coeur d'Alene Computer Club
Gary Edwards
506 Luncelord Ln—83814
Grangeville
Grangeville HS Computer Club
Don Kissinger
910 S. 'D' Street—83530
Idaho Falls
Eagle Rock Commodore
Computer Club
Jeanie Larson
P.O. Box 3884—83403-3884

ILLINOIS

Belvidere
Heuristics Users Group
Chip Downey
1303 Nettle #2—61008
Bloomington
Bloomington-Normal
Commodore ug
Carl Burress
P.O. Box 1058—61702-1058
Canton
Canton Area Commodore
Users Group
Robert S. Smolich
Spoon River College, RR #1—
61520
Champaign
Champaign Urbana Commodore
Users Group
Steve Gast
2006 Crescent Dr—61821
Elgin
Fox Valley Commodore
Users Group
Herb Gross
833 Prospect—60120
Galesburg
Knox Commodore Club
Randy Fox
195 Olive St—61401
Harvey
South Suburban V20 Users Club
Nick Forte
16409 Emerald—60426
Kankakee
Kankakee Hackers
Bill Brouillet
R.R. #2, Box 228-H—60901
Lincolnwood
C-64 Users Group, Inc.
David W. Tamkin
P.O. Box 46464—60646
Monmouth
Western Illinois Commodore
Users Group
Robert Cokel
906 W. 6th Ave—61462
Peoria
Commodore Users of Peoria
Jeff Martin
1600 W. Devereux—61614
Rockford
Rockford Area Commodore
Computer Club
Kathe Hoyer
2507 Pelham Rd—61107
Scott AFB
Scott Computer Users' Group
Gilbert D. Holland
P.O. Box 397—62225
Springfield
Springfield PET Users Group
Bill Eardley
3116 Concord—62704

INDIANA

Columbus
Columbus Commodore Club
Frank Nicholas
11210 W. Georgetown Rd—
47201
Indianapolis
VIC Indy Club
Fred Imhausen
Box 11543, 4812 E. Michigan
St—46201
N. Manchester
Manchester Commodore
Users Group
Richard M. Bellows
6060 E. 9th St—46902
Terra Haute
Western Indiana Commodore
Users Group
Dennis C. Graham
912 E. Brown Ave—47803
W. Lafayette
Commodore Owners of Lafayette
Ross Indelicato
20 Patrick Lane—47906

IOWA

Des Moines
Commodore Computer Users of
Iowa
Curtis L. Shiffer
P.O. Box 3140—50316
Hartford
Capital Complex Commodore
Computer Club
Doren Hulet
P.O. Box 58—50118
Waterloo
Waterloo Area Commodore Club
Rick Volker
945 Lowell—50702

KANSAS

Hutchinson
Salt City Commodore Club
Wendell D. Hinkson
P.O. Box 2544—67504
Viola
Commodore Users Group
of Wichita, Inc.
Walt Lounsbury
Rt. #1, Box 115—67149

KENTUCKY

Bardstown
Commodore Bardstown Users
Group
Patrick Kirtley
P.O. Box 165—40004
Bowling Green
Bowling Green Commodore
Users Group
Doug Skinner
P.O. Box 20214—42102
Glasgow
Glasgow Commodore
Users Group
Steve England
P.O. Box 154—42141
Henderson
Commodore Connection
James Kemp
1010 S. Elm—42420

LOUISIANA

Metairie
Sixty-Four 'Um Users' Group
Elizabeth S. Hoffman
4317 Stockton St—70001
New Orleans
Control Data Institute
Kent H. Courtney II
6600 Plaza Dr—70127
Shreveport
Ark-La-Tex Commodore 64 Club
Bill Walker
5515 Fairfax Ave—71108
Sulphur
Southwest LA Users' Group
Fred White
99 Ann—70663

Swartz
Ouachita Commodore Club
Beckie Walker
P.O. Box 175—71281

MAINE

Brunswick
Y.U.G. (Brunswick)
Peter O'Brien
20 Columbia Ave—04011
Orono
Computer Society of Penobscot
Art Pete
101 Crosby Lab. UMO—04469
Portland
Southern Maine 20/64
Ed Moore
10 Walker Street—04092
Scarborough
Y.U.G. (Scarborough)
George Caswell
16 Westwood—04074
Westbrook
Your Commodore Users Group
Mike Prociase
P.O. Box 611—04092

MARYLAND

Aberdeen
COMPUCATS
Betty Scheuler
680 W. BelAir Ave—21001
Baltimore
Baltimore Area Commodore
Users Group
Michael M. Broumberg
4605 Vogt Ave—21206
Westinghouse BWI Commodore
User Group
Lee D. Barron
P.O. Box 1693—21203
Woodlawn Commodore Club
Mike Long
1712 Aberdeen Rd—21234
Fallston
Harford County Commodore
Users Group
Kim Lloyd
P.O. Box 209—21047
Frederick
Frederick Functioneers
Stephen M. Jacobson
108 Key Pkwy—21701

Hagerstown
Hagerstown Users Group
Joseph F. Rutkowski
23 Coventry Ln—21740

Leonardtown
PAX/COM/64
David J. Hamblin
240 Jefferson St—20650

Potomac
Western Montgomery C64
Users Group
Jorge Montalvan
11209 Tack House Ct—20854

Rockville
Rockville/VIC/64 Users Group
Tom Pounds
P.O. Box 8805—20856

Silver Springs
Montgomery County
Commodore Soc.
Meryle B. Pounds
P.O. Box 6444—20906

Suitland
Edison Commodore Users Group
William H. Harr
4314 Oxford Dr—20746

MASSACHUSETTS

Bedford
Raytheon Commodore Users
Group
John Rudy
Raytheon Co—GRA6—017730
Foxboro
Foxboro Area Commodore
User Group
Samuel Knight
154 Green St—02035

Rutland
The Polyhedral Wizard
Rob Hodgson Jr.
422 Countryside Est—01543

Westfield
Pioneer Valley VIC/64 Club
Marvin S. Yale
34 Bates St—01085

Woburn
EM 20/64 Users Group
John Chaplain
36 Buckman St—01801

MICHIGAN

Ann Arbor
Commodore User Group—
U of Mich
John J. Gannor
School of Pub. Health—
U of Mich—48109
Bay City
Bay City Users Group
Jim Griffin
1013 N. Johnson St—48706
Clare
Mid-Michigan Commodore Club
Virgil Graham
—48617

East Detroit
Michigan Commodore 64 User
Group, Inc.
Chuck Ciesliga
P.O. Box 539—48021

Madison Heights
Slipped Disk, Inc.
J. Moskow
31044 John R—48071

Midland
Commodore Computer Club
Jack Walley
4106 West Man Rd—48460

Richmond
COMP
Brian Pringle
7514 Putty Gutt Rd—48062

Southfield
Commodore Computer
Enthusiasts
Steven Lepetz
20050 Winchester—48076

Watervliet
DAB Computer Club
Dennis Burlington
P.O. Box 542—49098

MINNESOTA

Little Falls
Heartland Area Computer Co-op
Sam Walz
2401 Riverwood Dr—56345

Redwood Falls
Interface
Ron Schilling
243 E. 2nd St—56283

MISSISSIPPI

Biloxi
Gulf Coast Commodore Club
Mark W. Harvey
4550 W. Beach Blvd—39531

Hattiesburg
Commodore Computer Club
Len J. Mathias
Dept. of Pol. Sci—U of Miss—
39406-0076

MISSOURI

Cape Girardeau
Heartland Users Group
Mason Emerson
129 S. Lorimer #7—64701

Golden
MOARK Commodore Users
Group
Marshall B. Turner
P.O. Box 504—65658

Joplin
Joplin Commodore Computer
Users
R.D. Connely
422 S. Florida Ave—64801

Kansas City
Commodore Users Group
of Kansas City
Salvador Cerda
P.O. Box 36492—64111

Liberty
Northland Amateur Radio
Association
Alan Boyer
811 Lindenwood Lane—64068

Maryville
Commodore PAC
Patricia Lucido
Horace Mann Learning Center—
64468

Warrensburg
Commodore User Group of
Warrensburg
Buck Sommerkamp
P.O. Box 893—64093

MONTANA

Missoula
Western Montana Commodore
User Group
Carl White
800 Kensington Ave—59801

NEBRASKA

Alliance
Alliance Commodore Computer
Club
M. Sells
1629 Boise—69301

Gering
Platte Valley Commodore
Users Group
Jim Parks
1720 'O' St—69341

Lincoln
Computer Power Unlimited
Robert Howard
416 N. 27—68503

Omaha
Greater Omaha C64 Users Group
Ken Jirele
2932 Leawood Dr—68123

NEVADA

Las Vegas
Las Vegas Area PET Users
Group
5130 E. Charleston Blvd—89122

Las Vegas
SOG Commodore Users Group
Lee Schram
4011 W. Charleston Blvd—
89102

NEW HAMPSHIRE

Rochester
C-64 U.S.E.R.S.
P.O. Box 4022—03867

Winchester
Monadnock Commodore 64
Users Group
Paul Rule III
RFD #1 Route 10—03470

NEW JERSEY

Belle Mead
ACGNJ PET/VIC/CBM Users
Group
Joseph M. Pyka
30 Riverview Ter—08502

Cherry Hill
South Jersey Commodore
Users Group
Fred Herman
P.O. Box 4205—08034

Freehold
F.T.C.U.
John Rinaldi
150 Starling Ave—07728

Morris Plains
Morris Area Commodore
Users Group
Robert J. Searing
51 Ferncliff Rd—07950

USER GROUPS

Morris Plains

N. American Commodore
Teachers Users Group
Robert J. Seating
51 Ferncliff Rd.—07950

Mount Holly

RCA Commodore Users Group
William Rowe
432 Hemlock Ln.—08060

Ocean View

Cape-Atlantic Commodore
Users Group
B. J. Chadwick
1440 Old Stage Coach Rd.—
08230

Ridgewood

INFO 64
Pete Nissely
16 W. Ridgewood Ave.—07432

Union City

Hudson County Commodore
User Group
Dave Westphalen
308 Palisade Ave.—07087

Wall Township

Jersey Shore Commodore
Users Group
Bob McKinley
1905 Monmouth Blvd.—07728

Wayne

Club 64
G. Cipolletti
Hamburg Tpke.—07470

Westwood

Commodore 64 Beginners Club
Thomas Martin
680 Leigh Ter.—07676

NEW YORK

APO New York
Zweibrücken Commodore
Computer Club
Henry White
200th TAMMC, Box 114—09052
06332-6347

Bethpage

Commodore Computer Club
N. Threusen
1111 Stewart Ave.—11714

Bronx

Commodore Microchips
Anthony Sanchez
340 E. Mosholu Pkwy.—10458

Brooklyn

Brooklyn Commodore Users
Group
Malcolm Jay Gottesman
1735 E. 13th St. Apt. #7N—
11229

East Setauket

Long Island VIC Society
Lawrence V. Stefani
20 Spyglass Lane—11733

Great Neck

Great Neck Commodore
Users Group
Adam Korn
30 Grace Ave.—11021

Great Neck

LIVE
A. Friedman
17 Piccadilly Road—11023

Hammondsport

Finger Lakes Area Komputer
Experts
Terry Lynne Narby
86 W. Lake Rd.—14840

Jaberg

Commodore Freaks
Mike West
9111 Railroad St.—13471

Mt. Vernon

Folklore Terminal Club
Ted Cortale
Box 2222-C—10551

New Hampton

C-64 Users Group of Orange
County
Stephen Gerstl
Box 238 RD #1—10958

New Platz

Computer Metropolis
Eric Dean
P.O. Box 39—171 Main St.—
12561

New York

New York Commodore
Users Group
Ben Tunkelang
380 Riverside Dr. 7Q—10025

New York City

V20/C64
Users Group
Ralph Lees
103 Waverly Place—10011

Newark

Finger Lakes Commodore
Users Group
Todd Andrews
229 W. Union St.—14513

Oswego

Oswego Commodore
Users Group
John R. Boronkay
208 Park Hall—SUNY—13126

Rochester

Commodore Users Group of
Rochester
P.O. Box 26514—14626

Saratoga Springs

Adirondack C64 Users Group
Paul W. Klompas
208 Woodlawn Ave.—12866

Syracuse

Commodore Computer Club
of Syracuse
P.O. Box 2232—13220

Tailman

Computer Club of Rockland
Peter Bollin
P.O. Box 233—10982

Tonawanda

64 Southtowns Users Group
Michael Leskow
504 Somerville—14150

Tonawanda

Commodore Buffalo Users Group
David Newton
199 Dale Dr.—14150

Tribes Hill

Mohawk Valley Commodore
Users Group
William A. Nowak
3818 Sunston Ave., P.O. Box
343—12177

NORTH CAROLINA

Charlotte
Charlotte C64 Users Group
H. S. Hanks
3717 Flowerfield Rd.—28210

Havelock

Down East Commodore
Users Group
Jim Worthington
302 Belltown Rd.—28532

Tryon

Tryon Commodore 64 Club
Robin Michael
P.O. Box 1016—28782

NORTH DAKOTA

Bismarck
Commodore Club of North
Dakota
James G. Allen
16067 Reno Dr.—58501

OHIO

Brook Park
C.P.U. Connection
Burke Frank
P.O. Box 42032—44142

Cincinnati

Commodore Users of Blue Chip
Ted Stalets
816 Beecher St.—45206

Maple Heights

SE Cleveland Commodore
Crazies Users Group
Carl Skala
18873 Harlan Dr.—44137

Marion

Marion Ohio Commodore
Users Group
Richard Munro
775 Wolfinger Rd.—43302

Mentor

NE Ohio Commodore
Users Group
Ross Black
P.O. Box 718—44062

Milford

Clercom-64
Dave Skaggs
5771 Observation Ct.—45150

New Philadelphia

Commodore 64 Users Group
Jeff Eklund
702 Park Ave. NW—44663

Toledo

Commodore Computer
Club of Toledo
Jim Cychlen
P.O. Box 8909—43623

Xenia

Dayton Area Commodore
Users Group
Charles Tobin
679 Murray Hill Dr.—45385

OKLAHOMA

Muskogee
Muskogee Computer Soc.
Commodore Users Group
Steve Ford
202 S. 12th Street—74401

Oklahoma City

Greater Oklahoma
Commodore Club
Richard P. Hill
1401 N. Rockwell—73127

OREGON

Albany
Albany Corvallis C64
Users Group
Al Rasmus
2138 Chicago St. SE—97321

Portland

NE Portland Commodore
User Group
Gary A. Thompson
8759 N. Calvert Ave.—97217

Portland

PGE Commodore Users Group
Richard Turnock
121 SW Salmon St.—97005

Prineville

Central Oregon C64 Users Group
Marvin McCleary
499 N. Harwood Ave.—97754

Sheridan

Yamhill County Commodore
Users Group
Dan Linscheid
Route 2, Box 246—97378

PENNSYLVANIA

Altoona
Altoona & Martinsburg
Commodore Users Group
Ralph Osmolinski Jr.
R.D. #4 Box 258—16601

Altoona

B.A.S.I.C.
Dimitri N. Dantos
1433 13th Ave.—16603

Apollo

Hackers Elite Club
Joe Moore
305 Route 356—15613

Berwyn

GE Com64
Edward Davidson
507 Westwind Dr.—19312

Blue Bell

Worldwide Commodore
Users Group
Dave Walter
P.O. Box 337—19422

Clarks Summit

Scranton Commodore
Users Group
Mark A. Davis
P.O. Box 211—18411

Clifton Heights

C.H.U.G.
Kevin J. Daly
P.O. Box 235—19018

Greensburg

Westmoreland Computer
Users Club
Gary Means
3021 Ben Venus Dr.—15601

Morrisville

Lower Bucks Users Group
Don Moyer
252 Mansfield Rd.—19067

Mount Holly Springs

Eight Squared
Andy Skelton
P.O. Box 76—17065

New Kensington

A-K 64 Users Group
Alton Glubish
1752 Fairmount St.—15068

Philadelphia

Boeing Emp. Personal
Computer Club
Alina McNichol
P.O. Box 16858 P32-31—19142

Pittsburgh

Bettis Commodore Users Group
Bill Campbell
592 Arbor Lane—15236

Pittsburgh

Pittsburgh Commodore Group
Joel A. Casar
2015 Garrick Dr.—15235

V. U. G. O. P.

Davin Plateau
1931 Rockledge—15212

Salona

Central PA User Group
for Commodore
Joseph W. Coffman
Box 102—17767

West Chester

Main Line Commodore
Users Group
Emil J. Volcheck Jr.
1046 General Allen Ln.—19382

West Mifflin

South Pittsburgh
Commodore Group
Charles W. Groves III
2407 Pennsylvania Ave.—15122

RHODE ISLAND

Harrisville

Burrillville Commodore
Users Club
David R. Migneault
28 Cherry Farm Rd.—02850

Narragansett

Narragansett Commodore
Users Group
Robert R. Payne
South Ferry Rd.—02882

Pawtucket

R.I.C.E.
Michael Skeldon
198 Morris Ave.—02860

SOUTH CAROLINA

Cayce/W. Columbia
Commodore Computer Club
of Columbia
Buster White
P.O. Box 2775—29171

Myrtle Beach

Commodore Update
Brad Bannon
230 Tarpon Bay—29577

North Charleston

Charleston Computer Society
Jack A. Furr Jr.
P.O. Box 5264—29406

Rock Hill

Rock Hill Commodore
User Group
Smatzki Robbie
565 Sealeyspark Cir.—29730

Spartanburg

SPARCUG
James B. Pasley
385 S. Spring St.—29302

TENNESSEE

Bartlett

Memphis Commodore
Users Club
Steven A. Gaines
P.O. Box 38095—38134-0095

Estill Springs

Commodore Computer Club
Marty Garner
P.O. Box 96—37330

Knoxville

ET 64 Users Group
Rick McCall
P.O. Box 495—37901
Metro Knoxville Commodore
Users Group
Edward Fritchard
7405 Oxmoor Rd.—37931

Soddy-Daisy

C64/VIC 20/+4 Club
Aaron Kennedy
2414 Blue Ridge Dr.—37379

TEXAS

Austin

Commodore Computer Club
of Austin
Roy Holmes
P.O. Box 49138—78765

Corpus Christi

Corpus Christi Commodores
Jim O. Rear
P.O. Box 6541—78411

Dallas

64 Users Group, Inc.
Stan Gordin
P.O. Box 801828
13604 Midway Rd.—75380

Hurst

Mid Cities Commodore Club
Diane Dews
413 Chisolm Trail—76053

Irving

Irving Commodore Users Group
Bill Marshall
P.O. Box 165034—75016

Longview

Longview Users Group
Dorothy Metzler
P.O. Box 9284—75608

Lubbock

Lubbock Commodore
Users Group
Robert Messengale
3817 64th Drive—79413

Mexia

BiStone Users Club
R. G. Gore
P.O. Box 386—76667

Victoria

Crossroads Commodore
Users Group
Jerry Guy
417 Irma Dr.—77901

Waco

Computas
Burl A. Hays
Route 4 Box 214—76705

UTAH

Ogden

Wasatch Commodore
Users Group
Mike Murphy
P.O. Box 4028—84402

VERMONT

S. Burlington

Champlain Valley Commodore
Users Group
Steve Lippert
6 Mayfair St.—05401

USER GROUPS

VIRGINIA

Alexandria
Alexandria Users Group
Jeffrey K. Hendrickson
1206 Westgrove Blvd.—22307

Franconia Commodore
Users Group
Mark Sowash
5924 Dove Dr.—22310

Arlington
Arlington VICTims (20/64)
Clifton Gladley
4501 Arlington Blvd.—22204

Crystal City Commodore 64 Club
Greg Selezynski
1235 Jefferson Davis Hwy
Ste 1200—22202

Dale City
Dale City Commodore
Users Group
Jack B. Doyle
P.O. Box 2004—22193-0058

Fairfax
PENTAF
Ron Thomas
9912 Colony Rd.—22030

Franklin
Commodore Users of Franklin
Bruce Powell
1201 N. High St.—23851

Hardy
Roanoke Computer Society
Larry Washburn
Rt. 1, Box 40—24101

Hurt
Central Virginia Users Group
Dale Moore
Route 3, Box 451—24563

McLean
C64 Users Group of McLean
John Mueller
7426 Eldorado St.—22102

Roanoke
R A C.E. Commodore
Users Group
Larry Rackow
4726 Horseman Dr.—24019

WASHINGTON

Arlington
Arlington Commodore
Users Group
Jane M. King
18204 67th Ave. NE—98223

Centralia
CBM Users Group
Rick Beaber
803 Euclid—98531

Ft. Lewis
64 PCS
Jim Litchfield
Quarters 2821-A—98433

Marysville
Bunch 'A' Bytes
Joey Miller
4916 121st Place NE—98272

Oak Harbor
Whidbey Island Commodore
Computer Club
Bob Hardy
P.O. Box 1471 #203—98277

Puyallup
PNB Users Group
Rod Small
9105 158th St. E—98373

Richland
Tri City Commodore
Computer Club
Jack Garvin
1926 Pine St.—99352

Seattle
C.O.M.P.U.T.E.R.
Art Witbeck
5303 Shilshale Ave. NW—98107

NNW Commodore Users Group
Richard Ball
2565 Dexter N. #203—98109

University 64 Users Group
Allen M. Grown
Pathology SM-30
Univ. of Washington—98195

Tacoma
World Wide Users Group
R. Smith
P.O. Box 98682—98498

WISCONSIN

Caledonia
C.L.U.B. 84
Jack White
P.O. Box 72—53108

Eau Claire
Eau Claire Area CBM 64
Users Group
John F. Slasky Jr.
Rte. 5 Box 179A—54703

Green Bay
Comm Bay 64
Richard F. Luxton
P.O. Box 1152—54305

Madison
Madison Area Commodore
Users Group
Napolean Smith
1850 Beid #11—53713

Menomonee
Menomonee Area Commodore
Users Gp
Mike Williams
510 12th St.—54725

Milwaukee
M.A.C.E.
John Postman
6332 W. Manitoba St.—53219

Racine
C.U.S.S.H.
Tim Trammel
3614 Sovereign Dr.—53406

WYOMING

Cheyenne
Cheyenne Assn. of
Comp. Enthusiasts
William Holden
505 Williams St. #260—82007

Lander
ZYMEC Users Group
Tim Struna
Rte 63, Box 357
11 Birchfield Ln.—82520

CANADA

Belleville
Baden Computer Club
Ben Brash
P.O. Box 1219—CFPO 5056—
KOK 3R0
07229-3791

Fergus
CWDHS Users Group
Jerry Rogerson
155 Belsyde St. East—N1M 1Y7

Hamilton
TRACK 64
Wayne Chapman
491 Kenilworth Ave. N—
H4H 4T6

Kimberley
Kootenay Computer Club
Tom Lang
348 Archibald St.—V1A 1M9

Montreal
C64 Users Group of Montreal
Robert Adlor
Snowdon P.O. Box 792—
H3X 3X9

St. Catharines
Niagara Commodore
Users Group
Ian Kerry
44 Queenston St. Unit 12—
L2R 2Y9

Stoney Creek
Eastdale Commodore
Users Group
R.W. Harasen
275 Lincoln Rd.—L8E 1Z4

Toronto
Toronto PET Users Group
Chris Bebbett
1912A Avenue Rd. Suite 1—
M5M 4A1

Victoria
C.P. 884
Michael Laganier
—G6P 8Y1

MEXICO

Mexico City D.F.
Club Herra*Tec C64
Alain Bojmal
Vicente Suarez 25—06140

User Group Support Program

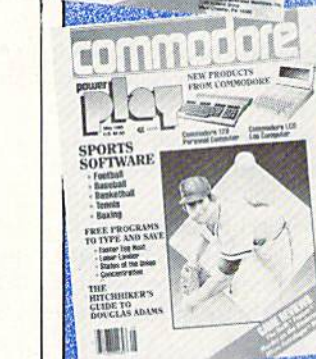
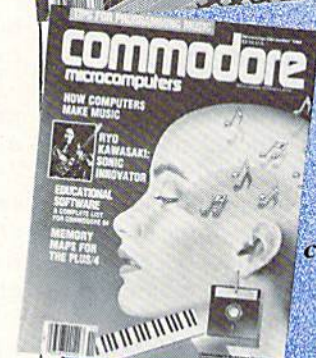
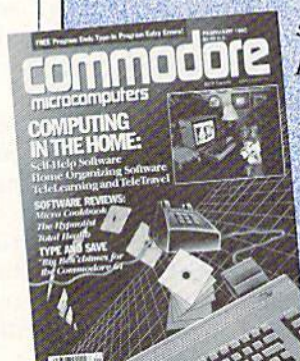
Commodore is creating a program to support Commodore User Groups. The two major components—approved user group status and a newsletter—are now available. Approved user group status is given to any user group meeting our basic criteria. These user groups receive meeting posters and membership cards and are automatically sent Input/Output each month. In addition they can request a speaker from Commodore to come and discuss (and demonstrate) new products at one of their meetings. The newsletter, INPUT/OUTPUT, will include announcements, user group programs, calendar of events, letters, questions, product specifications, programs, and surveys. It will be a newsletter FOR user groups BY user groups supported by Commodore without advertisements. For future issues of the newsletter Commodore is accepting announcements of user group activities, articles of interest, letters to the editor, and general questions. Please forward all correspondence with the name of your user group to:

Commodore Business Machines
1200 Wilson Drive
West Chester, PA 19380
Attention either New User Group or Input/Output

MAKE LIFE EASY

Syntax errors got you down? Need a cure for the computer language-barrier blues? A subscription to Commodore's official magazines will ease the pain with plenty of software reviews, programs to type and save, programming tips and behind-the-scenes industry news.

Get the inside story on Commodore computers with a subscription to both Commodore Microcomputers and Commodore PowerPlay. Send in the enclosed subscription card today.



And save 20% off the regular newsstand price!

AMIGA LAUNCH

Continued from pg. 77

Even if you are an experienced musician and/or programmer, however, producing music requires the proper tools. And there are many companies who are supporting this feature of the machine. For instance, Everyware, Inc. of Northridge, California, has *Muscraft*, which turns the Amiga into a professional four-voice synthesizer and sequencer. Cherry Lane Technologies of Port Chester, New York, has *Scorewriter*, which allows musicians to score and print music, and *Texture*, another music sequencing and editing package. They also produce *Harmony*, which uses artificial intelligence techniques to provide musical accompaniment as a musician performs. For the first time, the computer follows *your* lead, instead of you having to follow the computer.

For those sounds or musical effects that you have problems creating from scratch, the Amiga can help in another way. It can perform digital sampling of sound data. This means you can quickly and easily record an electronic version of any instrument, sound effect, or even human voices, save them, alter them and play them back in your programs.

Digital sampling is not the only way you can use the Amiga to create human speech. Included with the computer, as a standard feature, is a complete text-to-speech software system that uses the Amiga's sound capabilities to pronounce anything you wish it to say. It uses both the easier text-to-speech mode (type in a word and it will convert it to speech based upon an internal set of rules) and the somewhat more difficult phoneme approach. (Phonemes allow you to determine the pronunciation of a word exactly as you wish.)

As a result, anyone, professional programmers or beginners, can add voice to their work. I have been interested in speech synthesizers for some time, and have experience with a large number of them. I found the Amiga's voice to be better than any other software system I have heard yet, but not as good as some dedicated hardware-based systems. However, for the first time, speech is a standard feature on a computer, and you can be certain it will be used in a great many programs.

*There may be
many minds out
there just waiting
for something
to set them free.*

*Perhaps
the waiting is over.*

Business Applications

One thing you should keep in mind, however, is that the Amiga is not simply the greatest graphics and sound personal computer yet devised. It is also a very powerful business computer.

To start off, in terms of raw computing power, the Amiga is unsurpassed by any of the leaders in business personal computers. Let's just skip all the lesser machines and get right to the point. What is the premier business system? Well, if you have the money, it's the IBM PC-AT, and that's where we will begin.

The AT uses the Intel 80286 16/24 bit microprocessor, and it's fast—running, as I said before, at 6 MHz. That's fast, but not as fast as the Amiga's 7.8 MHz. The fact is that the Amiga runs 30% faster than the AT. And the Amiga uses all those co-processors to handle its graphics, sound, animation and I/O, so its 68000 is free to handle the data calculations, giving faster data handling.

Both computers come with 256K RAM in their minimal configuration, and both can be expanded. The AT can be expanded up to three megabytes of RAM, which is a lot. However, the Amiga is expandable to eight megabytes.

One of the best ways of comparing computers is by looking at the ROM, which is the built-in hardware-based programs that make them run. The AT comes with 64K of ROM, about the same as a Macintosh, and half again as much as the regular IBM PC. However, here again the Amiga far outstrips the AT, because it comes equipped with over 190K of system ROM.

Since we have already discussed the Amiga's graphics, I won't mention them again. But it is worth not-

ing the AT comes with only text graphics in monochrome, unless you shell out hundreds of dollars for an upgrade board. And then you still don't even match the bit-map resolution of the Amiga, which is up to 640x400 with a possible 4,096 colors, as opposed to the AT's 640x350 in 16 colors. And the AT never even dreamed of doing the other graphics the Amiga is capable of. In addition, the Amiga has other things the AT doesn't—like more keys, speech synthesis, state-of-the-art sound, and RS232, serial and parallel ports—that all come as standard features.

There is one place the AT is ahead, however. Its 5.25-inch disk drive stores a whopping 1.2 megabytes— even more than the 880K 3.5-inch floppy on the Amiga. However, that's not much consolation for AT owners, I'm afraid. And to be fair, the AT also comes with a 20-megabyte hard disk, which is essential for real-world business applications. But since Tecmar of Solon, Ohio, has a 20-megabyte 3.5-inch hard drive for the Amiga (about \$1,000), even that is no problem.

IBM Emulation

But hold on, you may say, hardware alone does not a business system make. It takes software to run a business, and the IBM is without argument the leader in business software. True, the Amiga will enter the market with many business programs ready to go, many more than the IBM or Macintosh did at their introduction. Nevertheless, they are dwarfed by the sheer numbers of IBM programs presently available.

So it was with considerable interest that I watched as Bob Pariseau of Amiga held up a 3.5-inch disk and announced that IBM compatibility on the Amiga would be via a software emulation, and not a more costly hardware solution as expected!

This emulator allowed the Amiga to load and run IBM DOS 2.0, which then loaded and ran *Lotus 1-2-3*! So you can continue to use your IBM PC software on the Amiga, if that is one of your criteria for a PC. However, when using the IBM PC emulator, you will find the Amiga is no faster or better than a regular IBM PC. Nevertheless, at a couple of hundred dol-

AMIGA LAUNCH

lars, it's a real cheap way of having your cake and eating it, too.

Multi-Tasking

However, you may not wish to be bogged down by IBM software on the Amiga, because that software won't take advantage of its unique abilities as a true multi-tasking computer! Multi-tasking is the ability to do more than one thing at a time. And the Amiga can run several programs at once without any apparent slowdown in execution. During the demonstration, I saw it running five different programs, each in a separate window. This is not any software gimmick. It is a concrete example of the engineering excellence of this machine. Its designers developed the hardware with multi-tasking in mind, not as an afterthought. And because of this, it does not slow when you ask it to do many things at once, at least not perceptibly.

With multi-tasking, you can be printing a document, telecommunicating, and designing a business presentation, all at the same time. And the business application software designed specifically for the Amiga is taking advantage of that fact. For example, The Software Group of Ballston Lake, New York, has a series of productivity programs called *Enable*. *Enable File* is a data base that allows over 256 fields per record, *Enable Calc* is a Lotus-like spreadsheet with macros, over 50 math functions, and the ability to have up to eight active spreadsheet files simultaneously in RAM. *Enable/The Office Manager* is a second-generation integrated package with a word processor, spreadsheet, data base, telecommunications, and graphics. It uses the Amiga's multi-window capabilities, is programmable, and can also transfer files to and from *Lotus 1-2-3*, *dBase*, *VisiCalc*, *VolksWriter* and others. That's quite a lineup!

Chang Laboratories of San Jose, California, has its *Rags to Riches* program line that include *Ledger*, *Payables*, and *Receivables*. Each handles up to 5,000 customers, accounts or vendors, is RAM-based, and claims to be twice as fast as any other accounting package. Tardis Software of Pebble Beach, California, has its *Maximillian* integrated system, a

*With multi-tasking,
you can be printing
a document, tele-
communicating,
and designing a
business
presentation.*

multi-tasking package that has a spreadsheet, word processor, data base, graphics, and communication.

Programmers' Aids

While all these programs are impressive, I am sure of one thing. They are just the beginning of things to come. The Amiga offers things no other computer has, and programmers will be turning out applications that will knock our socks off. And I am happy to report that programmers, too, have a ready assortment of tools available to do just that. For example, included with the Amiga is Microsoft ABASIC. According to Microsoft, it is the most powerful implementation of BASIC they have ever developed. It supports all the features of the Amiga, including graphics, windows, animation and sound. It is also, like everything on the Amiga, very fast.

Borland International of Scotts Valley, California, has announced that *Turbo Pascal* will be available for the Amiga. The Lisp Company of Los Gatos, California, has a version of LOGO that has aspects of LISP included. Lattice of Glen Ellyn, Illinois, has several programmers' packages, including C and several C cross-compilers that allow Amiga programs to run on VAX, UNIX and MS-DOS systems. And Metacomco of Monterey, California, has BASIC, Pascal, LISP and a 68000 Assembler/Linker System for program development. So you can see, with powerful programming tools like these already available, the Amiga owner is going to have both high quality and a large quantity of software to choose from.


Entertainment

For those of you interested in entertainment on the Amiga, have no

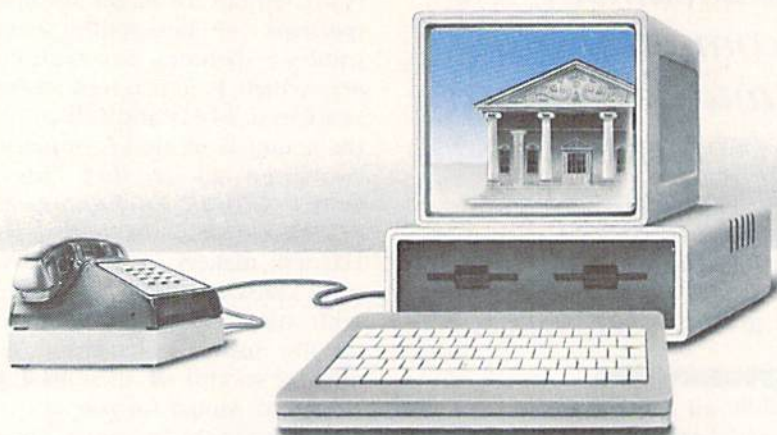
fear. The best games you have ever seen will soon be flooding the market. Some are already here. Sublogic, of Champaign, Illinois, who is already famous for *Flight Simulator II* (perhaps the best-selling computer game of all time), has *Radar Raiders*, which is a real-time fighter jet simulation in 3D and full color. And the sound is in stereo. Infocom has converted all of their adventure games (*Zork*, *Enchanter*, *Hitchhiker's Guide*,) to Amiga format. Hayden, makers of *Sargon III*, will offer chess on the Amiga—a version with nine levels and a library of 68,000 moves. Electronic Arts is making several of their best games over into Amiga format, and releasing some for the first time. Electronic Arts also has *Return to Atlantis*, a 3D undersea graphic adventure game for the Amiga. And Mindscape of Northbrook, Illinois, has *The Halley Project: A Mission in Our Solar System*, which is a real-time simulation of space flight that teaches facts about gravity, orbits and navigation.

The Creativity Computer

These are only a few of the applications, languages and entertainment programs demonstrated for us at the Amiga unveiling. By the time you read this, many more products will have been announced, and they will continue to be some of the finest and most innovative programs in the computer market. But with a machine like the Amiga, what else can you expect?

One of the central themes during the Amiga introduction was that this machine will allow the user to expand his or her creativity, by providing more real computer power in ways no one would have thought possible, and without letting the machine place limitations on their ideas. I believe it does that. While watching it being put through its paces, and being astonished time and time again, I began to wonder what heights Edison, Einstein or Goddard could have climbed to with this machine. And it occurred to me that there may be many minds like those out there in the offices, the schools, the farms and the factories just waiting for something to set them free. Perhaps, just perhaps, the waiting is over. 

GOT A COMPUTER? GOT A PHONE?



GET A DEGREE.

Now, for the first time, you can take real courses, from live instructors, right in your home or office, right on your own personal computer. You can use an Electronic Library for research, tune-in to interactive seminars, and take advantage of a full counseling center.

The Electronic University is a national educational system that connects your personal computer to recognized colleges and universities located throughout the country. You can study nearly any subject at your own pace, and on your own schedule.

Finally, technology is eliminating those barriers (time, location, and high cost) that have prevented you from completing your college education, entering a Master's Degree Program, or just taking that course you've always wanted to take.

No computer knowledge is required to use the system and all communication costs

are included in the course prices.

Degrees available through the Electronic University include: Associate Degrees in Business and General Studies, Baccalaureate Degrees in Business and the Arts, several MBA Degrees, and specialized Certificate Programs. There is also a variety of non-credit courses offered over the system, as well as Tutoring Programs for children.

Isn't it time to involve yourself in education once again? Have some fun, become part of the spirit of a national university system, and better yet, open up a world of new opportunities for yourself and your entire family. *Call us today:*

800-22LEARN or
800-44LEARN
in California.

THE ELECTRONIC UNIVERSITY
505 Beach Street, San Francisco, CA 94133
415/928-2800

SIXTH SENSE

Continued from Pg. 44

including scrolling screen one to provide space for new text, switching screens, and saving edited text. The split-screen option provides the user with the ability to compose messages before sending them down-line. This is helpful in conferences or other conversational modes, so your typing is not interspersed with received characters.

Perhaps the most useful functions in *Sixth Sense* are the 16 program-mable macros. Each one of the macros allows up to 80 characters for commands. By combining them with delays, wait options, the real-time clock, disk wedge and printer commands, you can perform a number of interesting functions. For instance, you can create a macro that contains all the sign-on procedures for an often-used BBS or on-line data base. By using both auto-dial and your macro, you can have the computer log on for you.

Or, if you really want to get fancy, you can set up a series of commands that will log your computer on in the wee hours of the morning (while most normal people are sleeping, the BBS is probably unoccupied, and the phone cost is low), pick up your mail, leave messages, and store the information obtained. Later, when you are awake, it can then dump the information to your printer (this way you won't wake anyone during the middle of the night).

Microtechnic winds up the guided tour segment of their manual with a list of no less than six different ways to contact them for additional information and user support. Microtechnic Solutions is a family affair, and they are always ready, willing, and able to help anyone who needs technical assistance.

Both the overall packaging and design of the program are superb. Microtechnic Solutions has a real winner with this one. *Sixth Sense* is billed as "the thinking terminal," and it is. It assumes a basic knowledge of telecommunications, and offers the user numerous useful options and abilities.

With *Sixth Sense*, the intermediate user can advance to the higher levels of telecommunications, while the more advanced user will find this program capable of most of the options they need to make full use of their 64.



QUINK

Continued from Pg. 28

educated adult may have a hard time at the median levels. This wouldn't be a problem if players could each choose a level consistent with their knowledge, but all contestants must play at the same level.

Because it uses a lot of data, there is a long wait while the items in your chosen category load. I think many people may choose the same category repeatedly in order to practice. When you start a new game, the program doesn't compare to see if you're playing the same category. Instead, it just starts reloading the data all over again.

In addition, when it finishes the loading, it goes directly into the game. I know it seems like a contradiction to complain about the game being slow and then want it to pause before starting, but if *Quink* required a keystroke to begin play, you could walk away to get a drink or snack while the clues were loading in. If two players or teams are talking as the game loads, the first player may miss several seconds of his turn before realizing the game has started without him.

Even with its few faults, this is a great game. I especially enjoyed playing it in single player mode to see how high a score I could get. It is both fun and addicting. In addition, because the correct category is available on the screen, it's educational. With it, new words can be added to your vocabulary. Admittedly, discovering that hemichordata is an animal kingdom phyla doesn't give you a complete and certain knowledge of what creatures fall into the phyla, but you at least have a reference point.

After playing this game for a while, you'll probably be able to name seven or eight different varieties of nuts. Maybe you'll add a couple of new constellations to those you already know, or finally remember that anteaters and koalas are marsupials.

But best of all, *Quink* shouldn't become boring. With five progressively difficult levels, there is a lot to learn before this game gets filed away. Everyone has areas they will do well in, and areas they can improve. You may even surprise yourself. I never realized how many breeds of cattle and dairy cows I was familiar with until they showed up in *Quink*. And me, a city girl, at that!



UNISOURCE

Your one source for computer hardware, software and peripheral needs since 1981.

What is Unisource? • A leading mail order computer company with a friendly, knowledgeable staff • Accepts VISA & MasterCard at never any additional cost • Provides toll free order lines • Ships in-stock merchandise usually within 48 hours • Discount prices on all products



Star
SG 10

\$239.95

(with purchase of TurboPrint Interface below)

This price-leading dot matrix printer has a NLQ mode that really is near letter quality! The new SG 10 from Star Micronics is a speedy 120 cps in draft mode and is almost daisy-wheel quality in LQ mode. This printer has easy access format switches, friction and tractor feed for personalized stationery and fan-fold paper, downloadable characters for great graphics, and ultra high resolution bit image graphics for precision plotting and graphics. Order with the fully compatible printer interface below for even greater savings.

The SG 10 has a suggested retail of \$299.95. Our everyday low Unisource price is \$249.95. But order the printer interface with your SG 10 and receive extra savings on both the printer and the interface! The SG 10 is only \$239.95 when you purchase either of the Turbo Print interfaces. Order part number SG 10.

VOLKSMODEM XII

Open up the world of telecommunications with this powerful 300-1200 baud smart modem specifically designed for your Commodore computer. This is a complete modem-cable-software package. Suggested retail on the package is \$339.95 — Unisource low priced at \$219.95! The unit is capable of full unattended operation in conjunction with stand alone terminals and computers which have an RS 232 interface. Volksmodem XII features full Bell compatibility, serial command operation, full and half duplex, auto answer, auto dial, tone and pulse dialing, busy detection and more — all of the features found on modems costing hundreds more! ANC 107C \$219.95



\$219.95

EPYX
FAST LOAD

\$34.95

Waitwaitwaitwait. If you're really getting tired of waiting forever for your Commodore 64 programs to load, we've got the answer: the FAST LOAD cartridge from Epyx. With FAST LOAD, programs that once took minutes are now booted in seconds. This cartridge is easy to use and five times faster! FAST LOAD doesn't slow down there, either. You can copy a single file, copy the whole disk, send disk commands, and even list directories without erasing programs stored in memory. Unlike other products, FAST LOAD works with almost all programs, even copy protected ones, including the most popular games. Suggested retail price is \$39.95. For a limited time, purchase FAST LOAD for only \$34.95. Order part number EPY 100.

**UNISOURCE
ELECTRONICS, INC.**
7006 UNIVERSITY • P.O. BOX 64240
LUBBOCK, TX 79464
CALL TOLL FREE 1-800-858-4580
IN TEXAS CALL 1-806-745-8834



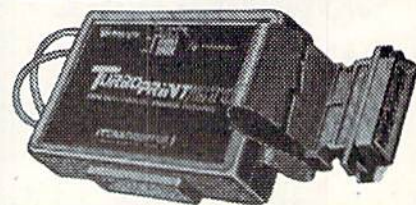
TURBOPRINT INTERFACE

\$59.95

(with purchase of SG 10 Printer above)

The TurboPrint GC was specifically designed for use with Commodore computers. This performance interface prints enhanced Commodore graphics (on printers like the SG 10 above) and has a special line buffer that doubles text printing speed on printers without on-board memory. External dip switches allow you to select specific printer type and device number. Suggested retail on TurboPrint GC is \$69.95 and is Unisource priced at \$64.95. But with the purchase of the SG 10 printer above, you get the TurboPrint GC for only \$59.95. Order part number TEL 100.

SPECIAL OFFER!!! Get the TurboPrint GTC with optional 16K or 32K printer buffer for \$69.95 with the purchase of the SG 10 printer. That's a \$79.95 retail value! Order part number TEL 101.



SUPER STIK

\$9.95

Quality joystick for the budget-minded Commodore user. The Super Stick control cable has built-in isolation electronics for use with the Commodore C64. This will offer the most from software as well as enhance motor skills. No adapter needed. Stick action for maximum enjoyment!

UNI 233S \$9.95

We'd like to send you a copy of our exciting new catalog covering a full range of Commodore 64 products. It's free just for the asking. Simply fill out this coupon, clip, and send it to the address indicated. We'll put you on our mailing lists and send our complimentary catalog.

Name _____
Mailing Address _____
City, State, Zip _____

FOR FREE INFORMATION FROM OUR ADVERTISERS

We've removed the reader service numbers from our ads, but you can still get free information about our advertisers' products and services.

Simply turn to the Advertisers' Index on the last page of this magazine. Next to each advertiser's name is their reader service number. Circle the appropriate numbers on the Reader Response Card in this issue, detach the card, affix postage and mail.

Be sure to use the Advertisers' Index and the Reader Response Card in this issue to get free information about our advertisers' products and services.

THE COMMODORE CUSTOMER SUPPORT HOTLINE HAS A NEW NUMBER! 215-436-4200

*Be sure to make a
note of it.*

REPAIR GUIDE

Continued from Pg. 62

how to clean your disk drive heads, how to align and calibrate your 1541, display screens and eye problems, and how to use the latest techniques in thermal imaging and thermography to quickly spot hardware problems.

The book concludes with advanced troubleshooting techniques using specialized electronic test equipment. These often expensive pieces of equipment include: digital meters, logic clips, logic probes, logic pulsers, current tracers, IC testers, oscilloscopes, logic analyzers, signature analyzers, soldering/desoldering irons, and chip extractors. Although (unfortunately) the explanation of the proper use of the above tools is limited, we are left with a deeper understanding of their role in a "hardware approach" troubleshooting methodology. Thanks to the *Commodore 64 Troubleshooting & Repair Guide*, I will never again become intimidated by the innards of the 64 or the alien tools that make up a repairperson's treasure chest.

The book's appendix is well thought out, and contains several nice reference sections. First, there is a section containing a complete data sheet of 64 specifications. Secondly, there is a 64 chip information chart which contains data concerning chip location, IC number, and description as well as schematic diagrams. Next, there are disassembly/assembly instructions for the 64 and the 1541. We're also shown how to replace surface-mounted components; routine preventive maintenance techniques indexed by day, week, month, every-other month, and year; a summary of cautions and notes; various code conversion charts; a term glossary; and an extremely detailed three-page bibliography containing virtually every book on computer repair that has ever been printed!

All in all, the *Commodore 64 Troubleshooting & Repair Guide* is an extremely valuable book to own. It will not magically transform you into a repair wizard, but it will give you a substantial understanding of the Commodore 64's inner workings and what steps to take if those workings should run afoul. But more than anything else, this valuable book should give all 64 owners the most important thing of all: peace of mind. **C**

SPACE SHUTTLE

Continued from Pg. 20

makes your radar return sporadic.

If you forgot to close those cargo bay doors, you've already aborted, so don't worry about landing. On the other hand, if you've done everything right to this point, you're on your way to touchdown at Edwards AFB. Soon after passing through the heat zone, you'll see the desert landscape below and your radar display will help line you up with the runway. Lower your landing gear at the proper time, keep your nose up and listen for the solid thud of the front landing gear as you touch down.

And that's all there is to it? Sure. That's a bare outline. There are so many things to keep track of, so many things to do at just the right time, you may find yourself wondering how anyone manages to fly a real Space Shuttle. But it can be mastered, just as the people with the "right stuff" master it in real life.

To help you master it, Activision has provided a toll-free hotline, Mission Control Hotline, that may be called anytime on weekends to help with your questins or to get you out of a tight spot. Touching the Commodore button will freeze the screen while you make the call.

Now, throughout this review, I've avoided referring to *Space Shuttle* as a game. Despite the fact that it has excellent graphics, excellent sound effects, and excellent joystick control, it is not a game. It is an experience.

Programmer Steve Kitchen worked closely with NASA and had access to the shuttle flight simulator to make this simulator as realistic as possible. At one point during the testing of the *Space Shuttle* simulator, one of the testers accidentally landed the shuttle by using the steering rockets instead of the main engines.

Informed of this anomaly, the folks at NASA ran the routine through their computers and found that, indeed, it could be done. That routine now resides in the computers of the real Shuttle as an alternative, emergency landing procedure.

We'll never hear a story like that about *Pac Man*. But I think what we will hear is that many Young Astronaut chapters will adopt *Space Shuttle* as a companion piece to *Sky Travel*, using both simulations to give them a leg up on a fascinating future. **C**

TALKING TEACHER

Continued from Pg. 22

keyboard. Depressing a "D" in this example will cause the friendly (but authoritative) voice from within the computer to respond with, "You're getting warm . . . try to the left."

Once correctly located and pressed, the letter responds with some cute sound effects as it merrily walks across the screen into the countryside. At this point, an acorn, alligator or other such "A" item may be presented with the voice stating that, "Acorn (or whatever) starts with the letter A. Can you find the letter A on the keyboard?" This is another good feature, since it reinforces the learned information. Correctly depressing the "A" key moves the youngster along to the next letter.

Due to the "crash-proof" provisions of *Talking Teacher*, if the desired lesson is to be stopped and another lesson started, the computer must be shut off and the program loaded again. This, too, is a very sensible way of doing things, since the lessons are commensurate with the user's skills; each lesson will take at least a few sittings for the fledgling reader to master completely.

The instructions supplied with *Talking Teacher*, though brief, are complete and easy to understand. Most of the instructions for using the lessons are supplied by the voice within the program itself. Busy moms are sure to love this program, since it allows the child to use it without any parental intervention. Since the instructions and helpful directions are spoken, it isn't necessary for mom to supervise and read the screen prompts for the tyke.

The program is rich in positive feedback. Correct responses during the lessons earn musical salutes, while incorrect choices evoke helpful responses. A demonstration of the right answer encourages better future performances. The program is upbeat, lively and encouraging.

With the combination of so many winning elements in such abundance, *Talking Teacher* moves educational software into new areas previously uncharted. The masterful blending of sonic and visual elements in pleasing proportions results in an outstanding program for early learners. But don't just take my word for it. *Talking Teacher* speaks for itself!



IS IT POSSIBLE TO MAKE THE BEST ANY BETTER?!



The MW-350 is getting better with age because of these new additions:

- Standard 4K Buffer
- Special Software Modes
- Supports more printers
- ★★★★★★★★
- Optional Transparent Mode
- External switch selectable Commodore graphics mode for Epson, Star Micronics, C. Itoh Prowriter, Okidata, Seikosa, Banana, BMC, Panasonic, Mannesman-Talley, Think Jet & others.

And it still has:

- Built-in Self Test with Status Report
- Microprocessor controlled emulation of Commodore printers for compatability with popular software

NEW INTRODUCTORY SALE!

PRICE \$89.00
OR \$79.00 with trade in of your old interface

Universal Input/Output Board for C-64 & C-128

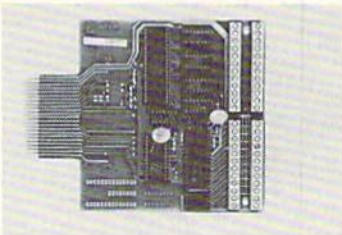
- 16 Channel 8-bit A/D converter with 100 microsecond sampling time.
- 1 D/A output
- 16 high voltage/high current discrete output
- 1 EPROM socket
- Use multiple boards for additional channels up to 6 boards

MW-611 \$225.00

Dealer Inquiries invited



Micro World Computers, Inc. (303) 987-9531
3333 W. Wadsworth Blvd. #C105
Lakewood, CO 80227



PLUS 4™ OWNERS READY FOR ADOPTION?

The PLUS EXCHANGE Users Group publishes a monthly newsletter for the Plus 4. Membership provides you with information and support. In the newsletter, we explore the uses of the software and answer commonly asked questions.

A digest and listing of software available for the Plus 4 is provided. In addition, we are receiving submissions of programs from our members for sale and distribution.

We have software that enhances the performance of the built-in software, games, personal financial packages, and more.

Fill out the coupon below and return it today! You'll receive a free program library disk to expand your computing now.

PLUS TRIMIC
EXCHANGE

Name: _____
Address: _____
City, State: _____ Zip: _____

Phone: _____
☐ Please send me more information. ☐ I am ready for adoption.

Enclosed is my check for \$10.00, initial quarter registration.

(Circle One) VISA / MASTERCARD # _____ Expires _____

TRIMICRO

P.O. Box 11300, Santa Ana, CA 92711

ADVERTISERS' INDEX

ADVERTISER INDEX	READER SERVICE NO.	PAGE NO.
ABACUS SOFTWARE	1	101, 105
AQUARIAN COMMUNICATIONS	2	63
APROTEK	3	CIV
BAMTEK	4	51
BYTES & PIECES	5	106
CHEATSHEET	7	100
CHEVRON	8	31
C.M.S.	9	2
COIN CONTROLS, INC.	10	119
C.O.M.B.	11	92, 122
COMMODORE CORPORATE	*	CII-1, 66-67
COMMODORE SOFTWARE	*	21, 32
COMPUSERVE	14	94-95
COMPUTER WAREHOUSE	15	112
COMTEL	16	11
COVOX	*	114
ELECTRONIC ARTS	18	25, 45
ENTREPO	19	43
EPYX	20	14, 29
GLENCO ENGINEERING	21	42
GOLD DISK	22	61
GROLIER ELECTRONIC PUBLISHERS, INC.	23	10
G.S.R. SOFTWARE	24	8
HOWARD W. SAMS & CO., INC.	25	47
INKWELL	26	51
INTEGRATED SOFTWARE SYSTEMS	27	117
INTELLIGENT SOFTWARE	28	113
KYAN SOFTWARE	29	113
LOADSTAR	30	48
MASTERTRONIC	31	27
MICROCOMSCRIBE	32	106
MICROWORLD ELECTRONICS	33	135
MIDWEST SOFTWARE	34	36
MIMIC	35	35
NANOSEC	6	CIII
NAVARONE INDUSTRIES, INC.	36	9
OHIO COMPUTER SERVICES	37	36
OMNITRONIX	38	51, 121
PACIFIC TRI-MICRO	39	4, 5, 6, 9, 135
PROTECTO	40	52-59

	READER SERVICE NO.	PAGE NO.
QUANTUMLINK	41	16-17
SKYLES	42	116
SYSTEMS MANAGEMENT ASSOC.	43	91
SMADA ENTERPRIZES	44	121
SPECTRUM AMERICA	45	97
STARPOINT	46	37
SUBLOGIC CORPORATION	47	12, 23
SUPERIOR MICRO SYSTEMS	48	8
SYNTECH	49	51
SYSTEMS GO	50	108
TEKTONICS PLUS, INC.	51	42
TELE-LEARNING SYSTEMS, INC.	52	132
TENEX	53	109
TIMEWORKS	54	7
UNISOURCE	55	133
VIEWTRON	56	64-65
WILEY PROFESSIONAL SOFTWARE	57	107
X-10 U.S.A.	58	41

*NO READER SERVICE NO. GIVEN

THAT DOES NOT COMPUTE

March/April 1985

Tinkertools

In the third paragraph of this article, we failed to flag a trademarked brand name. TINKERTOY is a registered trademark of CBS, Inc. and should have been flagged as such in that article.

May/June 1985

Teletel

We incorrectly credited Denise Boneau for the photos in this article. Photos were taken by the author, Matthew Kiell.

July/August 1985

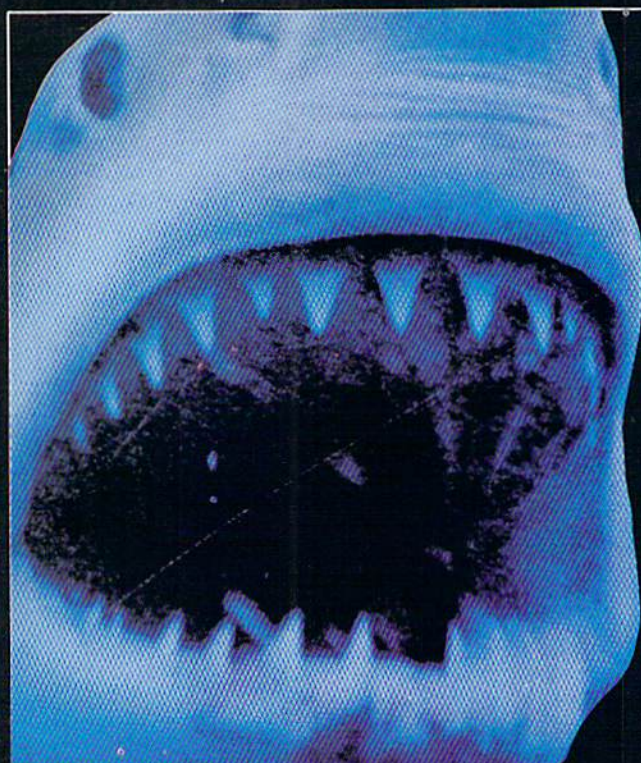
Chameleon

When you are using Chameleon in BASIC and want to return to text mode, use this command: SYS BA + 9.

September/October 1985

Simple Windowing for the Commodore 64

Although he was credited in the table of contents, the author's byline did not appear on the article itself. The article was written by Bruce Jaeger.



TAKE A FEW BYTES OUT OF PROGRAMMING

PRO-COMPILER	•	\$99.00
PRO-ASSEMBLER (Macro Cross Assembler)	•	\$88.00
ASSEMBLER PC128	•	\$39.95
BODY MAN	•	\$34.95
THE NUTRITIONIST	•	\$39.95
GAME PACKS	•	\$34.95
ADVENTURE PACKS	•	\$34.95

Call Toll Free 1-800-NANOSEC (626-6732)



C64 / PC128



NANOSEC™
CORPORATION

Valley West Plaza 4185 South 300 West, Suite 12 Ogden, Utah 84403 (801) 392-0109

AMAZING DAISY

NOW! FULL SIZE, FULL FEATURE, LETTER QUALITY AT ONLY \$353

If you have been searching for a letter quality printer you probably found that the flood of claims and counterclaims were a real roadblock in your search. Not long ago we were in the same position. We tried to determine which daisy wheel printer had all the features anyone could want, but would also appeal to the cost conscious buyer. Recently several manufacturers introduced printers that had features we were seeking. After a thorough assessment we eliminated all but one which precisely met our qualifications.

THE RESULTS ARE IN

We found the printer which has all the features anyone could want. We've named it the Arotek Daisy 1120, a real heavy-duty workhorse printing at 20 characters per second. The manufacturer is Olympic Co. Ltd., a highly respected Japanese firm.

FEATURES GALORE

This printer has it all. To start with, it has a front control panel with indicators for Pitch Selection which allows for 10, 12, or 15 characters per inch (CPI) or Proportional Spacing. There is a Select (Online) button (with indicator) and a Line Feed button. You can also set Top-of-Form or Form Feed with the touch of the TOF button. Other front panel indicators include Power and Alarm.

To load a sheet of paper, simply place it in the feed slot and pull the paper bail lever. The paper feeds automatically to a 1 inch top margin and the carriage aligns to the selected left margin. In this manner, each page can have identical margins.

You can continue to use your Commodore while the Daisy 1120 is printing.

The built in 2K buffer allows a page or two of concurrent printing and use of your computer for the next job. To really take advantage of your printer's optional features, the automatic Cut Sheet Feeder eliminates tiresome paper handling. Also available is the adjustable Tractor Feed option. *Compare our option prices!*

Best of all the Daisy 1120 is quiet: only 57 dB-A (compare with an average of 62-65 dB-A for others).

COMPLETE COMPATIBILITY

The Daisy 1120 uses industry standard Diablo® compatible printwheels. Scores of typeface styles are available at most computer or stationary stores. You can pop in a 10, 12, 15 pitch or proportional printwheel and use paper as wide as 14". At 15 CPI you can print 165 columns—a must for spreadsheet programs.

The Daisy 1120 uses the Diablo Hytype II® standard ribbon cartridges. Again universally available.

Not only is the hardware completely compatible, the control codes recognized by the Daisy 1120 are Diablo 630® compatible (industry standard). You can take advantage of all the great features of word processing packages and automatically use superscripts, subscripts, automatic underlining, bold-face (shadow printing) and doublestrike.

The printer has a set of rear switches which allow the use of standard ASCII as well as foreign character printwheels. Page length can be set to 8, 11, 12, or 15". The Daisy 1120 can also be switched to add automatic line feed if required.

THE BEST PART

When pricing a daisy wheel printer with all these features (if you could find one), you would expect to pay \$600 or \$700 dollars. The options would add much more, but our exhaustive research has paid off for you the Commodore user. We can now offer this printer for only **\$353**. Order yours today!

NO RISK OFFER

Try the Daisy 1120 for 2 weeks. If you are not satisfied for ANY reason we will refund the full price—promptly. A full 1-year parts and labor warranty is included. Another indication of quality and reliability.

THE BOTTOM LINE

Arotek Daisy 1120 (Order#1120) \$353 w/standard Centronics parallel interface and 2K buffer.

Options

Auto Cut Sheet Feeder (#1110) \$188

Tractor Feed (#1112) \$77

Interface with cable for all Commodore (except PET) (#1105) \$44

Ask about cables and interfaces for other computers.

Shipping is \$11—UPS continental USA. If you are in a hurry, UPS Blue or Air Parcel Post (second day air) is \$25. Canada, Alaska, Mexico and Hawaii are \$30 (air). Other foreign is \$60 (air). California residents add 6% tax. Prices are cash prices—VISA and MC add 3% to total. We ship promptly on money orders, cashier's checks, and charge cards. Allow 14-day clearing for checks. No C.O.D.'s. Payment in US dollars only.

TO ORDER ONLY CALL TOLL FREE

(800) 962-5800 USA

(800) 962-3800 CALIF. (8-8 PST)

Or send payment to address below:

Be sure to include order numbers with all items.

Technical Information & Customer Service: (805) 987-2454 (8-5 PST)

Dealer Inquiries Invited

© 1985 APROTEK. All rights reserved.
Trademarks: Diablo, Hytype II,
630-Xerox Corp. PET, CBM.



APROTEK
1071-A Avenida Acaso, Camarillo, CA 93010